

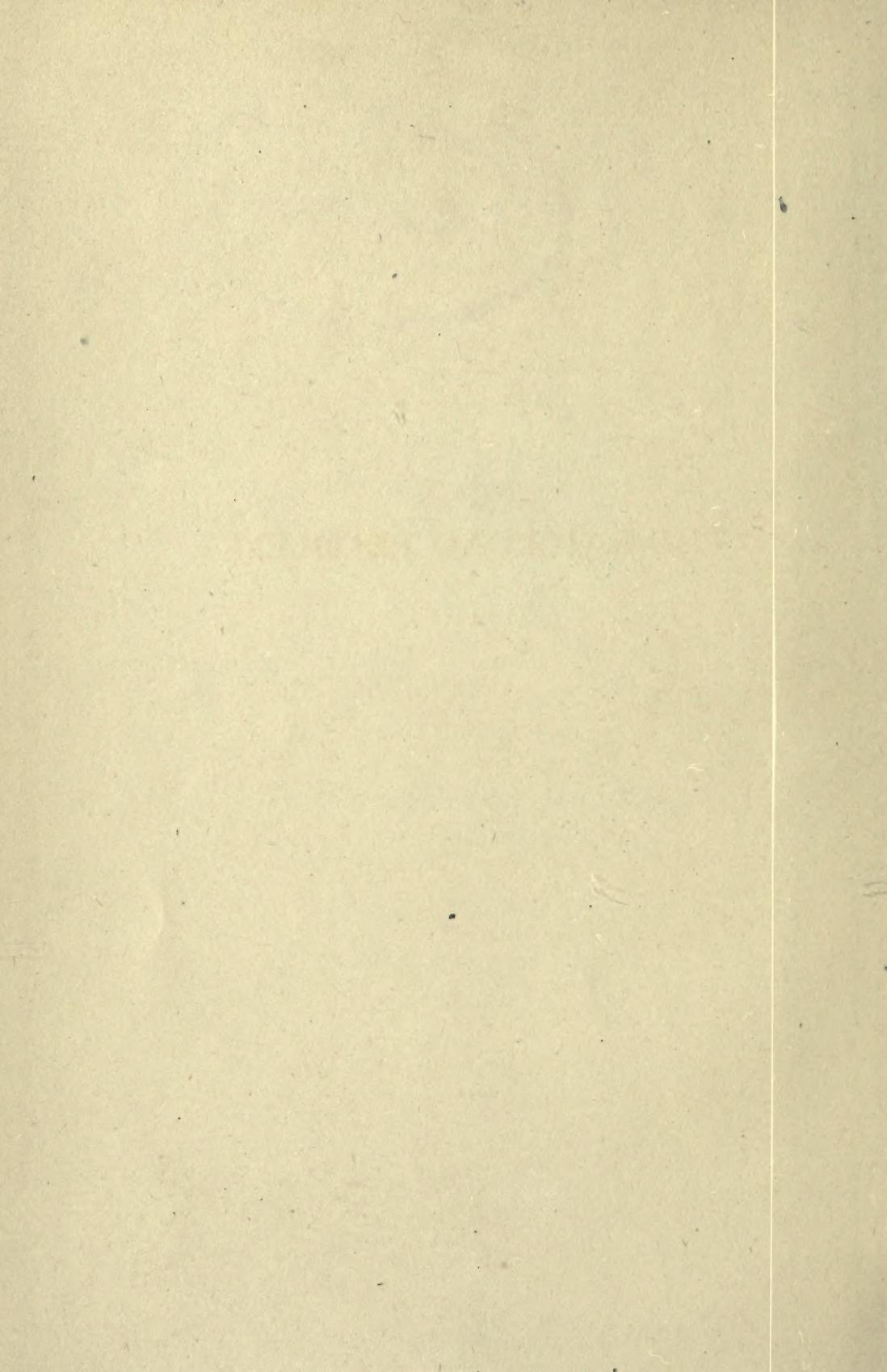
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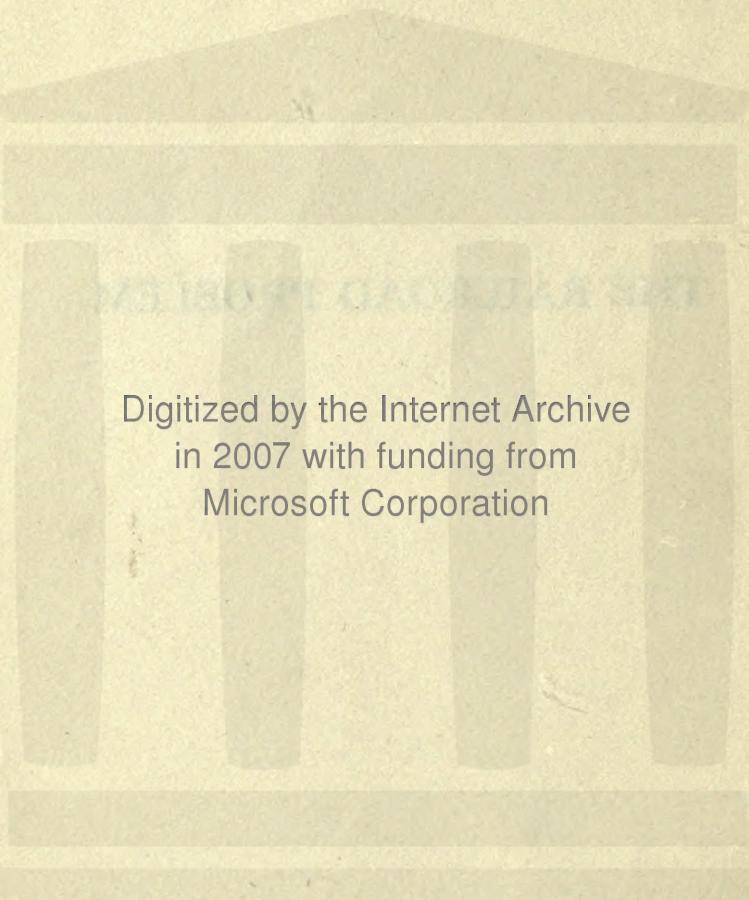
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The
**RAILROAD
PROBLEM**

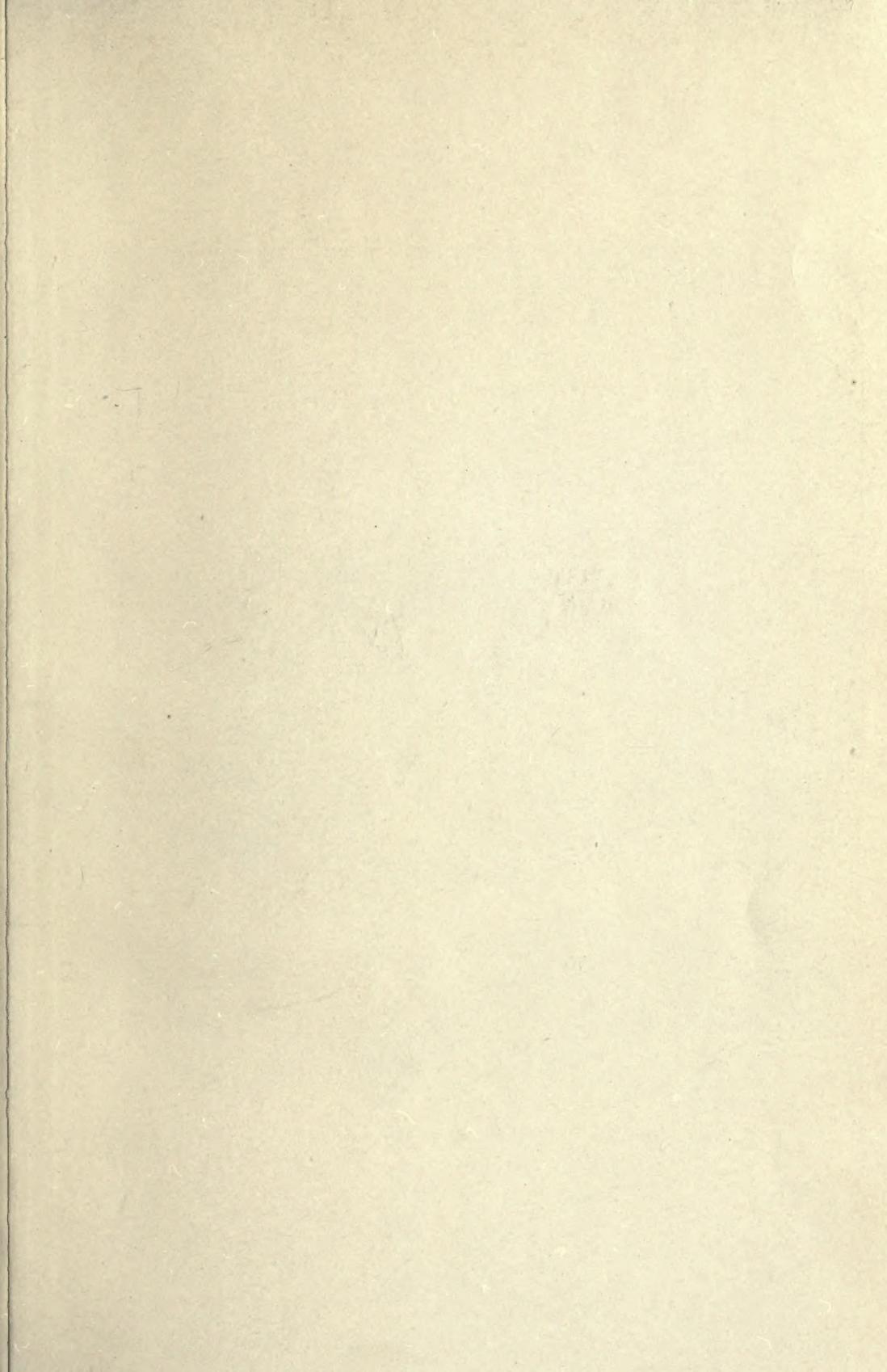
EDWARD HUNGERFORD

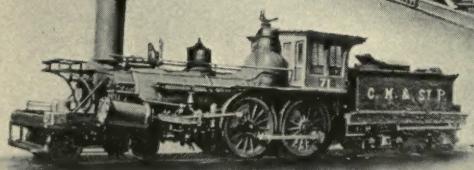
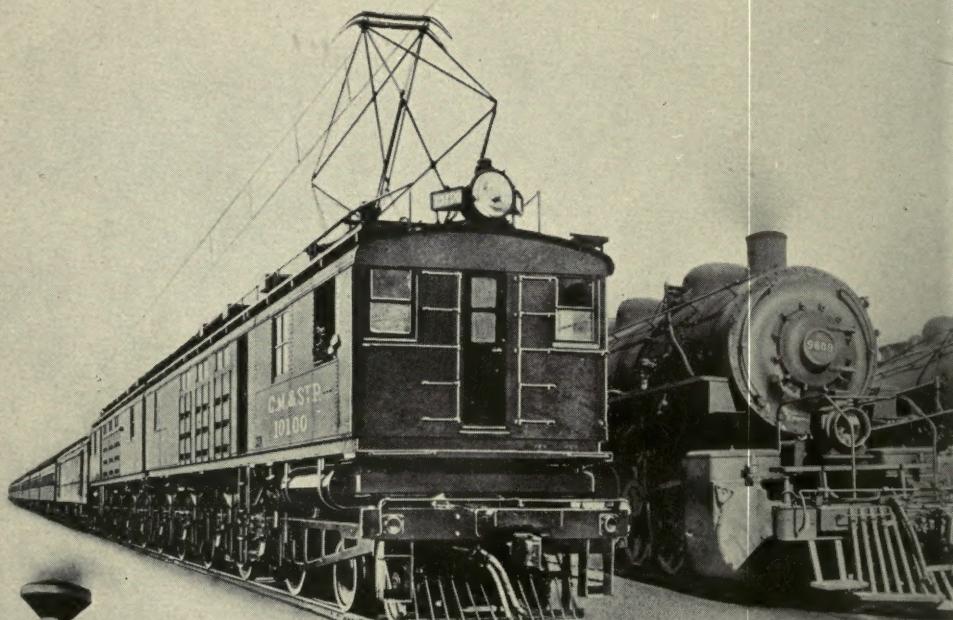


THE RAILROAD PROBLEM



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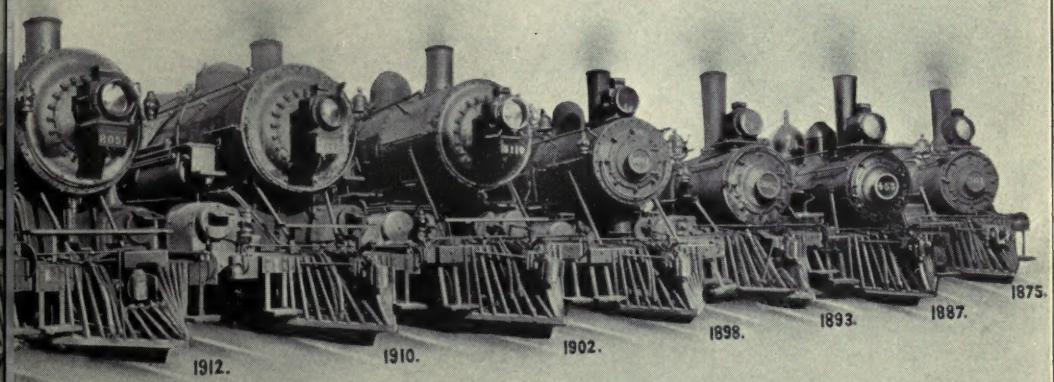




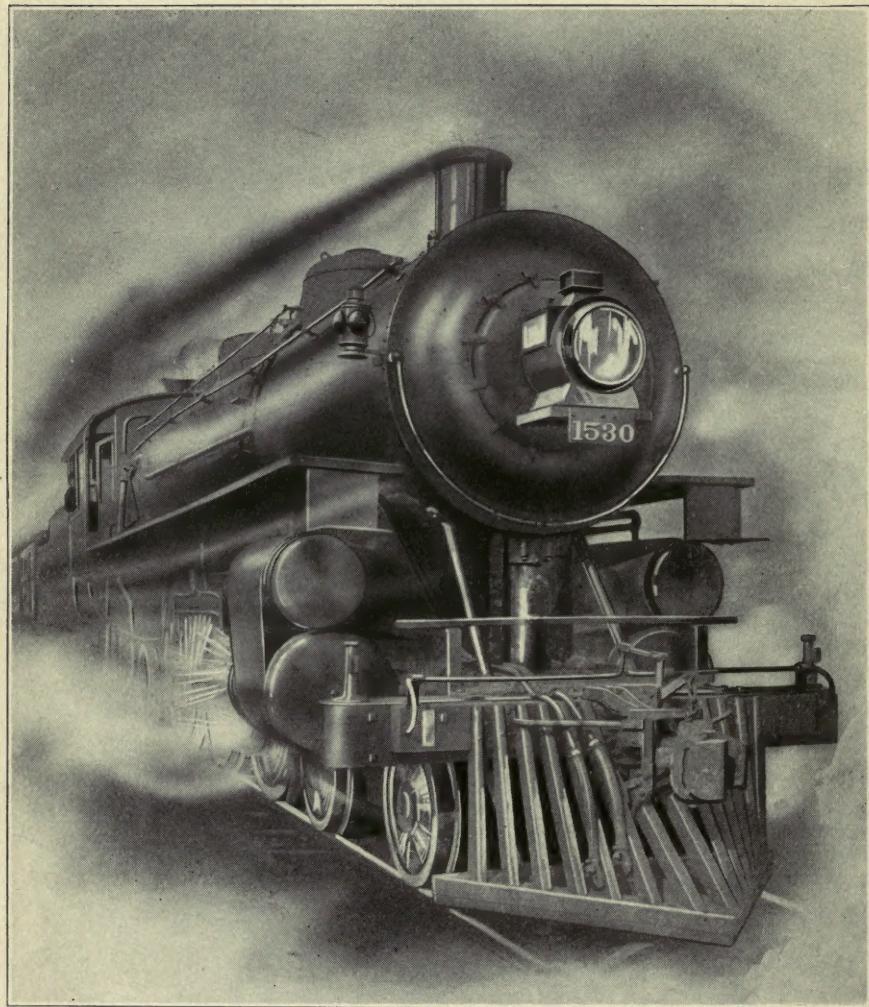
Courtesy of the Chicago, Milwaukee, and St. Paul Railway.

An interesting illustration of rail-power development.

Notice the evolution
is overshadowed by



the crude steam engine of 1848 into the giant locomotive of 1913, which in turn
brought the arrival—electricity.



Courtesy of the C. M. & St. P. Railway.

Steam, the giant power, which, by welding our states together with bands of steel, has been a mighty factor in the unifying of the nation.

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The Railroad Problem



Ecce

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By

Edward Hungerford

Author of "The Modern Railroad," etc.

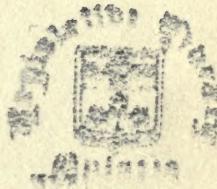
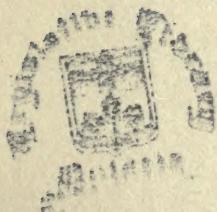
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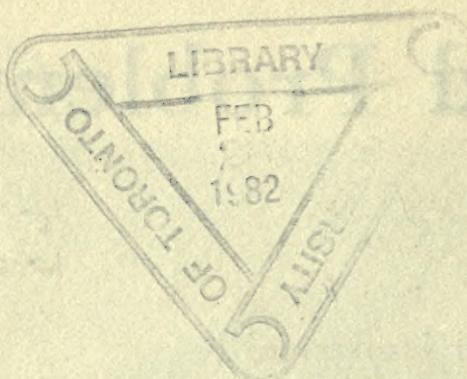


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1917





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1917

Published April, 1917

To

An Old Friend, and a Good One

SAMUEL O. DUNN

Acknowledgment

I WISH to express my indebtedness to the editors of *Collier's*, *Every Week*, and the *Saturday Evening Post* for their very gracious permission to use, as portions of this book, parts of my articles which have appeared recently in their publications. To Mr. E. W. McKenna of New York is due a special word of appreciation for his helpfulness in the preparation of this book.

E. H.

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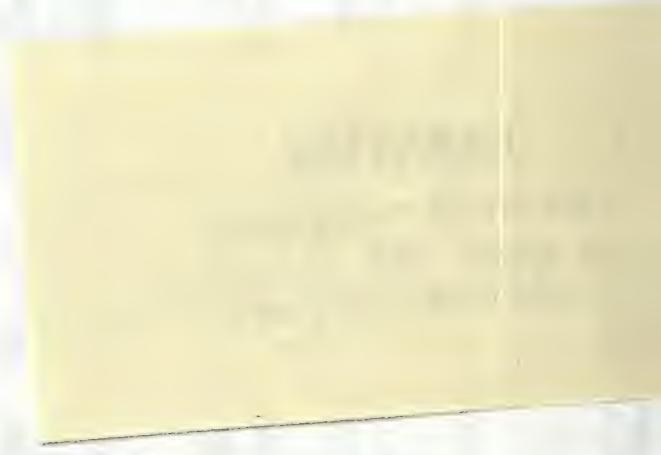
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ERRATUM

The word “telephone”
on page 182, line 2,
should read “telegraph.”



THE RAILROAD PROBLEM

CHAPTER I

THE SICK MAN OF AMERICAN BUSINESS

ON a certain estate there dwells a large family of brothers and sisters. There are many of them and there is great variety in their ages. They are indifferent to their neighbors; they deem themselves quite self-sufficient. But, for the most part they are an industrious family. They are a family of growing wealth—in fact, in every material sense they may already be called rich. And their great estate is slowly beginning to reach its full development.

In this family there are several older brothers who long since attained a strength and dominance over some of the younger members of the family. It is one of these brothers about whom this book is written. It does not assume to be a story of his life. That story has been told by abler pens. It merely aims to be a brief recital of his present condition. For, truth to tell, this older brother has come upon hard times. After a long life of hard work, at a time when his service should be of greatest value to the estate, he has broken down. He has begun to fail—and in an hour when the greedy neighbors grow contentious and he may be of greatest service to his own big family.

The Railroad Problem

The Railroad is the great sick man of the American business family. He is a very sick man. Doctors may disagree as to the cause, sometimes as to the nature, of his ailment; they may quarrel even as to the remedies they deem necessary for his recovery. But there is no question to the fact that he is ill. Just at this time, owing to the extraordinary and abnormal prosperity that has come to the United States, largely because of the great war in Europe, he has rallied temporarily. But his illness continues, far too deep-seated to be thrown off in a moment. And the recent extraordinary legislation passed by Congress has done nothing to alleviate the condition of the sufferer. On the contrary, it has been a great aggravation.

I make no pretense as a doctor. But in the course of ten years of study of our American railroads certain conditions have forced themselves upon my attention — time and time again. I have had the opportunity to see the difficulties under which the railroads labor and some of the difficulties which the railroads have carved for themselves. I have had the chance to see how a mass of transportation legislation has acted and reacted upon these great properties. I have known and talked with their employees — of every station. And I have made up my own mind as to the great opportunity that still awaits the railroad in America. For I am firmly convinced that the great transportation organism of the United States has but scratched the surface of its usefulness. It is this last phase of the railroad that is, or should be, of greatest interest to every American.

Within the short space of the pages of this book, I am going to try to show first the financial plight that has overtaken the overland carriers of our country. I am less of a financier than physician. But the figures upon which my premises are builded have been obtained by a veteran railroader; they have been carefully checked by expert auditors and railroad statisticians, and as such they may be called fundamental.

Given first the financial and the physical plight of our railroads as it exists today, we shall come to another great phase of its weakness—the labor question. Partly because of a disposition to put off the real solution of this problem to a later and apparently easier day, and partly because of conditions over which the railroads have had no control whatsoever, this problem has grown from one of transportation to one of politics—politics of the most vexed and complicated sort. We shall look at this labor question from the most engrossing angle—the human one—and we shall try to look upon it from the economic and financial angle as well. And we shall reserve our real opinion as to its solution until we have had the opportunity to look from the depressing picture of the railroad of today to the picture—by no means conceived in entire fancy—of the railroad of tomorrow.

Upon that second picture we shall build our opinion as to the present necessities of the railroads. Because, in my own mind, it is only as the railroad seeks opportunity, as it seeks to enlarge its vision, that it will be given the chance to live as a privately owned and managed institution. It is today close to the parting of the

ways, and the men who control it have come now to the point where they will have to choose—the one path or the other. It will no longer be possible to delay the decision of a really vital economic question to a later, and an easier, day.

Around the bedside of this sick man of our great estate are gathered the physicians and the nurses. They are a motley lot. One of the nurses is called Labor, and at first thought you will think him well worth watching. Another nurse is more appealing at first sight. She is a slender *spirituelle* thing. We call her Regulation. Perhaps she is worth watching, too. Perhaps her ways should be mended. She is not bad at heart; oh, no! but she has had bad advisers. Of that you may be sure—at the beginning.

And it is quite certain that until she does mend her manners, until Labor, the other nurse, does likewise, the caller who stands around the corner will not come in the sick room. The invalid constantly calls for him. The man around the corner is known as Capital. He holds a golden purse. But you may be quite sure that he will not come to the sick man and thrust the purse within his fingers until both Labor and Regulation have changed their manners.

There are no two sides to such an argument.

With which statement let us turn from parables and toward plainer speaking. Let us begin consideration of the plight of the railroad.

CHAPTER II

THE PLIGHT OF THE RAILROAD

REMEMBER that the Railroad is the big man in the American business family, the very head of the house, you may say. Sick or well, he dominates his brothers—even that cool, calculating fellow whom we delight to call “the Banking Interests.” All America pays toll to transportation. And, inasmuch as the steam railroads are its dominating form of transportation, the entire country hangs upon them. In the long run this country can prosper only when its railroads prosper.

Do you wish to dispute them? Before the facts your contention will not hold very long. According to the last census more than 1,700,000 persons were directly employed upon the steam railroads of the United States; some 2,400,000 in industries bearing directly upon the railroads—lumber, car and locomotive building, iron and steel production, and the mining of coal. It is a goodly number of folk whose livelihood, or a large portion of it, comes from an indirect relation to the railroad. It has been said, with a large degree of statistical accuracy, that one person in every ten in the United States derives his or her living from the railroad.

Perhaps you are not one of this great family of 10,-

500,000 persons—more folk than dwell in the great state of New York, including the second largest city upon the face of the world. Granted this—then probably you are one of the 10,000,000 savings-bank depositors in the United States. If you are, you are an indirect holder of railroad securities. The savings-banks of this country have many, many million dollars of their savings invested in railroad bonds. If you have not even a savings-bank account let me assume that you have a life-insurance policy; there are three life-insurance policy-holders for every savings-bank depositor. The value of every one of those 34,000,000 policies depends on the wealth that is locked up within the strong boxes of the life-insurance companies. And a very great proportion of that wealth is expressed in the stocks and bonds of railroad companies.

Try as you may, you cannot escape the dominance of the railroad in financial and industrial America. You might have neither savings-bank account nor insurance policy of any sort, yet the railroad would touch you constantly, through both your income and your outgo. If you were a city man, it would touch you not only in the prices that you pay for milk and meat and vegetables, but for the rent of your house or apartment. As I write, the entire East is panic-stricken for fear of a coal famine, faces steadily rising prices. The production at the mines, despite a scarcity of labor, has not been far from normal. But the railroad has failed in its part of the problem—the providing of sufficient cars to transport the coal from the mines to the consumer. It has been hard put to find cars to

move the munitions of war from the interior to the seaboard towns. And the coal mines, because of the lack of railroad cars, have been unable to relieve the situation. So panic has resulted. Upon its heels have come similar, if somewhat lesser panics over the congestion and lack of delivery of foodstuffs—conditions which have been reflected in rises in the prices, if not in the value of most foods. These prices already have reached higher figures than at any time since the Civil War. Today they are nearly even with those which prevailed during the dark days of the sixties. And even if they are due directly to crop shortages and abnormal exports they still are a reflex of the railroad's intimate touch with every man, woman, and child all the way across the land.

Sitting on the porch of his home at dusk, the farmer looks out over his broad acres, sees the great industrial aids that American invention has given him for the growing and the harvesting of his crops and forges, perhaps, that on each of these mechanical devices he has paid a toll to the railroad. But when he looks to his wheatlands he must recall that it is the railroad that carries forth their crops—not only to the cities and towns of the United States, but to the bread-hungry land, far overseas. In those markets he competes with the wheat from lands so far distant that they seem like mere names wrenched from the pages of the geography book—Argentina, India, Australia. Because of this alone, it is nationally important that the steel highways which lead from our seaport gateways inland to the wheat and corn fields be kept healthy and efficient.

They have become integral parts of that broad national policy which says that the United States is no longer isolated or insular but one of the mighty company of world nations.

Will you permit me for a moment to enlarge upon this point—this competition between our farmer of the West and the farmer of the Argentine Republic, of India, of Australia, and of the nations of the Baltic Sea in the market of the consuming nations of the world? As the wheat fields of each of these nations are nearer tidewater than the wheat fields of the United States, it long ago became necessary for our railroads to lower the transportation rate for grain in order that the American farmer might not become submerged in this great international competition. That this has been done, a single illustration will show:

A bushel of wheat today is transported from the center of the great granary country of our Northwest or Southwest to tidewater—an average distance of 1,700 miles—for 27 cents. This is at the rate of .53 of a cent—a minute fraction over half a cent—per ton-mile. The average ton-mile rate in Great Britain, 2.30 cents, as applied to our average grain haul in the United States of 1,700 miles, would make the transportation cost of American wheat four and one-half times as much, or \$1.21. The American farmer owes a far greater debt to the railroad than he sometimes may believe. He may have suffered under the oppressions and injustices of badly managed roads—may yet be smarting from these oppressions and injustices. But how much greater would be the oppression and injus-

tice of a high grain rate such as I have just shown? And if such a rate were imposed upon him, would he be able in an average year to grow wheat at a profit, to say nothing of being able to compete with it in the broad markets of the entire world?

A minute ago and we were speaking of the abnormal prosperity of the railroads. The flood first descended in October, 1915. It rapidly mounted in volume. The railroads declared embargoes, first against this class of freight and then against that. Solicitation ceased. The bright young men of their traffic forces were set to work helping the overworked operating departments, tracing lost cars and the like. The backs of their operating departments were all but broken. I myself saw last winter on the railroads for a hundred miles out of Pittsburgh long lines of freight cars laden with war munitions and other freight making their slow and tedious ways toward tidewater. I saw Bridgeport a nightmare, the railroad yards of every other Connecticut town, congested almost overnight, it seemed. The New York terminals were even worse. For a long time it seemed as if relief might never reach them.

It seemed wonderful, but it was not. It seemed like millions in railroad earnings, but it was not. Translated into the unfeeling barometrage of percentages it all represented but five and one-half per cent on the actual value of the railroads of the United States. And that, compared with the long season of lean years that had gone before, was as nothing.

Take the season of years from 1907 to 1914—a

season for which the statistical records are now complete. Despite the great financial panic of 1907, these were, in some lines of business, mighty prosperous years. The output of automobiles was to be measured not in hours but in the very fractions of minutes. You might figure the earnings of the "movies" well into the millions each twelvemonth; they were building new theaters in all the cities and the bigger towns, almost overnight it seemed. Manufacturing and selling, nationally speaking, were up to the average. Yet in those very years, it was necessary for some of our very best railroads—the best operated and the best financed, if you please—to dip into their previously accumulated assets to pay the dividends which they had promised to their stockholders, in several cases to either lower or omit dividends. And some of the best of these were also compelled to pinch their maintenance expenses to a point that brought them close to the safety line in operation, or even beyond it.

And what of the weaker roads—the roads upon which whole communities, whole states, if you please, are frequently absolutely dependent? What did these roads do in such an emergency? The record speaks for itself. The best of these second-class railroads made no secret of the fact that they were cutting down on maintenance in order to pay their dividends or the interest upon their mortgage bonds. The worst of them simply marched down the highway to bankruptcy. At no time in the history of this country has as much of its railroad mileage been in the hands of receivers as today.

If you are in that glorious company of self-appointed patriots who violently proclaim themselves at every possible opportunity "anti-railroad," you may be asking me now why so many of our roads have entered bankruptcy. You may be asking me if it is not due in some cases to bad location, and in others to inefficient or dishonest management. I shall reply to you by saying that perhaps fifty per cent of the railroads which are in bankruptcy today are there because they never should have been constructed in the first place and because of the financial management. The lack of judgment, oftentimes the sinister motives that brought them into being are now being paid for and paid for dearly. And in the second place, I will take no issue with you as to either carelessness or dishonesty in management of some of our railroads.

"Why is it that every investigation of a railroad nowadays shows such a rotten condition throughout its affairs?" asked a distinguished economist at a dinner in Chicago last winter.

E. P. Ripley, the veteran president of the Santa Fé, answered that question.

"It is because a road is never investigated until it is morally certain that its affairs are rotten," said he, and then told how but one or two rotten apples would send their foul odors through an entire barrel and so seemingly contaminate its entire contents. Would you blacken a whole company because a few of its members have erred? Take another instance. A club for a while shelters a genuine blackleg. Are we to say that, because of this mere fact, its other members are

not as good as any of us? So it is with the railroads. You cannot point even the finger of suspicion to such properties as the Santa Fé, the Burlington, the Pennsylvania, the North Western, or the Baltimore and Ohio railroads—to mention a few out of many, many instances. These are good roads; in some instances because they have been extraordinarily well located, but in most instances because of their continuous enlightened management. Yet some of them have been hard put to it of late to maintain their dividend obligations to their stockholders. And many roads have been compelled to lower or else suspend entirely the dividends paid in the years gone before.

“How about efficiency?” you may interject.

You are not the first to ask that question. It was asked several years ago by a distinguished citizen of Boston—Louis D. Brandeis, now a justice of the Supreme Court at Washington. In the course of a rate hearing in which he appeared as counsel, Brandeis asked the question, then answered it himself.

“I could save the railroads of the United States a million dollars a day, by applying the principles of modern efficiency to their operations,” was his quiet answer to his own interrogation.

The remark was a distinct shock to the railroad executives, to put it mildly. Some of them were angered by it. The wiser ones, however, went home and sent their secretaries scurrying out after all the books on the then new science of efficiency that could be found.

The more they studied efficiency the less these wise

men were inclined to anger against Brandeis. Some of them found that they had been practicing efficiency on their properties for a long time past—only they had not known it by that name. They had been rebuilding whole divisions of their lines, relocating and reconstructing them so as to lower grades and iron out curves—all to the ultimate of a more economical operation of their roads. A bettered railroad means invariably a cheaper one to operate. The saving in grades and curves—no matter what may be the initial cost—means a more than proportionate saving in fuel cost, as well as in wear and tear upon the track and cars.

Remember, if you will, that one of the biggest things that efficiency spells is economy. And economy is always a popular virtue in railroading, particularly among those gentlemen whose only interest in the railroads arises from the fact that they own them. If greater efficiency meant greater economy—well, perhaps it was just as well that that smart attorney from Boston made his remark at the rate hearing, only perhaps he might have phrased it in a little less violent fashion.

That is why a man like Daniel Willard, the remarkably efficient president of the Baltimore and Ohio Railroad—the man who has done so much toward rehabilitating that one-time minstrel-show joke into one of the best railroad properties in the United States—spent days and nights reading every scrap about efficiency that could be brought to his attention, why he brought Harrington Emerson, one of the best-known of the efficiency experts into his own offices and staff,

why, beginning with his great car and engine repair and construction shops, he is gradually extending the principles of modern scientific efficiency to every corner of the railroad which he heads. Willard's example has been followed by other railroad executives. And it is because of these and other efficiency principles that the best of our railroads have been enabled to crawl through the hard years of the past decade, without going into bankruptcy.

It is a gloomy record—these lean years in Egypt. They came succeeding a decade of apparent prosperity for most of the railroads. I say "apparent" advisedly. For, when you get well under the surface of things, you will find that even the first six or seven years of the present century were not genuinely prosperous for the overland carriers. Dip into statistics for a moment. They are dry and generally uninteresting things but nevertheless they are the straws which will show the way the wind is blowing. Look at these:

In 1901 the net capitalization of our railroads was, in round figures, \$11,700,000,000. Six years later, or at the end of the greatest period of material prosperity that the United States has ever known, this capitalization had increased to \$16,100,000,000—approximately thirty-seven per cent.

A great deal has been written about railroad capitalization—a great deal without knowledge of the real facts in the case, and a great deal more with knowledge but also with malicious intent. These figures speak for themselves. Translated, they represent the

expenditures of the railroads for permanent improvements and expansions during that busy seven-year period. At first glance an expenditure of more than \$4,000,000,000 is staggering. Yet what are the facts? The facts are that hardly one of these roads expended enough that memorable season to keep pace with the vast demands of the freight and passenger traffic—particularly the freight—upon them. We experienced great railroad congestions during the winters of 1903, 1905, 1906, and 1907. And the loss to the large users of railroad facilities because of these earlier congestions is no vague thing; it can be figured high in the millions of dollars. And furthermore it can be said that there is no period of expansion in recent American commercial history that has not been both limited and hampered by the lack of transportation facilities. What a commentary this, on our so-called national efficiency!

Today we are just crossing the threshold of what seems to be an even greater period in the industrial expansion of the nation.¹ Yet how are our railroads

¹ "Not only have the developments of the last fifteen months disclosed the enormous productive capacity of the people and industry of this country, but they have also shown that when it is being fully utilized the facilities of the railroads are not adequate to the demands which it causes to be made upon them. To sum up, then, the industry and commerce of the country grew rapidly throughout the ten years ending in 1907, and almost throughout that period the facilities of the railroads were increased so rapidly that they proved adequate to the demands made upon them. At last, however, the traffic did catch up with the facilities, the result being the great car shortage of 1906-1907. The year 1916, unlike the year 1906, marks the beginning, not the approach

prepared to meet their great problem? In 1901, as we have already seen, they met it by an expansion of their physical facilities. But in 1901 the railroads had credit. In 1916 the credit of many of them had become a rather doubtful matter. And this, of course, has been a serious detriment to their expansion—to put it mildly.

An analysis of the service, both freight and passenger, of the railroads in the year 1907, the last of the "big years" in railroad traffic, compared with that of 1914—the most recent year whose figures are available—is illuminating in estimating railroad credit today, or the lack of it. The passenger-mile—representing

of the end, of a period of industrial and commercial activity and growth. There will doubtless be a painful and violent readjustment after the war ends, but there will be another period of industrial expansion after the readjustment is passed.

"Since our railroad facilities have proved inadequate at the beginning of the present period of prosperity, will they not prove inadequate to the demands which will be made upon them as soon as the period of readjustment is over. And if they prove inadequate at the beginning of a period of prosperity, what kind of a situation will they cause to develop if industry steadily grows more active and traffic heavier, as it did for several years prior to 1906?

"There seems to be only one rational answer to this question. No matter how favorable to a period of prolonged and great prosperity other conditions may be, progress in industry and commerce will be sharply arrested, and there will not be any long continuance of prosperity, if the facilities of transportation are not greatly increased. The net operating income of the railroads during the year now closing has been unprecedented, probably averaging more than six per cent on the investment in road and equipment. In the past whenever it has averaged over five per cent there has resulted a largely increased investment in new facilities. In view of the large net earnings now being made the expenditures during 1916 for new mileage and trackage, for new equipment and other improvement have been relatively small."—*Railway Age Gazette*.

the progress of one train over one mile of track — is the unit of that form of traffic. In 1914 the total passenger-miles had increased to 35,100,000,000 from the total of 27,700,000,000 in 1907 — or 25.7 per cent. Similarly the ton-mile is the unit of freight transportation. As the name indicates, it represents the carrying of one ton of goods of any description for a mile. In 1914 the ton-miles had grown to 288,700,000,000 from 236,600,000,000 — or twenty-two per cent.

But, as the traffic grew, it was necessary that the railroad should grow. Despite supreme difficulties in finding credit it did manage to invest some \$4,042,000,000 in property expansions and reconstructions during the seven years from 1907 to 1914. Yet this very money must be paid for, and, in view of the gradually impaired credit, paid for rather generously. At five per cent, this expenditure represents an added annual interest charge of \$202,101,000 to the railroads of the United States, a figure whose great size may be the better appreciated when one realizes that it is considerably more than half a million dollars a day.

Against this increased outgo one must measure increased revenues for 1914 over 1907, of \$452,188,000 — one deals in large figures when one speaks of the earnings and expenses of more than a quarter of a million miles of railroad. Yet even increased earnings of more than \$400,000,000 are not so impressive when one finds that operating expenses and taxes in 1914 were \$506,888,000 higher than in 1907. And both operating expenses and taxes are far higher in 1916 than they were in 1914.

Hold this picture up to the light. I have begun to develop the huge plate for you. Now study its details for yourself. An investment of \$4,000,000,000—more than ten times the cost of the Panama Canal—produced, at the end of a seven-year cycle, increased transportation earnings of more than \$450,000,000; yet it required \$500,000,000, or an excess in a single year of more than \$50,000,000, to meet the pay-roll, material tax, and other costs of operating the railroads. And in this figure we have not taken account of that annual interest charge of more than half a million dollars a day for the huge \$4,000,000,000 investment fund.

That interest charge cannot be ignored. Bankers demand their pay. Add the deficit in a single year—a normal year, if you please. Here it is—\$54,698,000 plus \$202,100,000—and you have a total deficit of \$256,798,000. And this is but a single year. The years that preceded it were no better.

The money that went to meet these deficits was provided from some source. Where did it come from? Most of the big railroaders know. They will tell you, without much mincing of words, that it came from previous accumulations of surplus, or else from money withheld from the upkeep of the physical property of the railroads. Of this last, much more in due course. For the present moment, consider that great \$4,000,000,000 expenditure between 1908 and 1914 for additions and betterments. It was none too much—not even enough when one comes to consider it beside the great expansions in service as represented by the show-

ings of passenger-miles and ton-miles. And yet today, as we shall see in due course, the railroads stand in need of far greater development and expansion than ever before in their history. Five or six years ago that supreme railroader, James J. Hill, estimated that the railroads of America would need a further expenditure of \$1,100,000,000 a year upon their properties before they would be in shape even to decently handle the traffic that would be coming to them before the end of the present decade. Hill was a master railroader who stood not only close to his properties but close to the great territory which they serve. He knew that the states of the Union which are west of the Mississippi River had been developed to only twenty-seven per cent of their ultimate possibilities. It would be hard to state the lack of development of the railroads of that territory in exact percentage. It certainly would be a figure far less than twenty-seven.

If you are a traveler at all familiar with the Middle West and the South; if you are traveling steadily and consistently these years over all of their rail routes, you must have been convinced of their appalling condition. Many of their main lines are deplorable; their branch lines are unspeakable. Branch-line service in every part of the land has been a neglected feature of railroad opportunity—as we shall see in due course. But in the Middle West and in the South they are at their worst. If they do not actually cry aloud from a physical standpoint for reconstruction, their service, or the lack of it, certainly does. Yet the people, the communities, and the industries which are situated upon them are entitled

to a railroad service which shall enable them to compete upon an even basis with the communities and industries which are situated upon rich and efficiently managed railroads. I feel that this is an economic principle to which there can be no dissent. And I think also that there can be no dissent to the wretched plight of many of the roads of the Middle West and the South—more particularly the Southwest. In rough figures, the prosperous railroads of the land, representing some forty per cent of its mileage, are able to give service to their patrons; sixty per cent are unable to render a proper service.

But even in the prosperous sections of the West—of the larger proportion of the country—one who rides and sees and thinks cannot fail to be impressed with another great cost, yet to come. I am speaking of the removal of tens of thousands of highway grade crossings, in our towns and cities and in the open country. Already a good beginning has been made; but it is as nothing compared with the work which remains to be done. The coming of the automobile has hastened the necessity of the completion of this work. The railroads have contrived many ingenious and perfected methods of safeguarding their highway grade crossings. The best of them are most inadequate, however.

The fact remains—a fact that must be particularly patent to you when you ride across Michigan, or Indiana, or Illinois, or Iowa, or any of their sister states—that here is a great and vastly expensive work awaiting the railroads of this country. In the larger cities—New York, Boston, Buffalo, Chicago, St. Louis, Kansas

City, to name a few striking examples—many millions have been expended in this work within the past few decades. While the several communities—in some instances the state treasuries—have borne a portion of these expenditures, the burden has fallen invariably upon the backs of the railroads. Fortunately the railroads which have succeeded in absolutely eliminating many of their highway crossings—and, in so doing, reducing a large part of their accident claims—have been the wealthier roads. But that is little satisfaction to a community unfortunate enough to be situated on the lines of a bankrupt road. The chances are that its grade crossings, being more poorly protected, are more dangerous.

One thing more, while we are upon this subject and are speaking particularly of this lack of development of the railroads of the West and of the Southwest. It is an interesting fact that there are but three railroads—the Santa Fé, the Union Pacific, and the Southern Pacific—which have done any considerable amount of double-tracking west of the Missouri River. Yet, as we shall see when we come to the military necessity of our railroads, it is only a double-track railroad which is competent to handle any really considerable volume of traffic. And it is equally true that it is more than foolish to attempt to build or to develop any considerable mileage of branch lines until there are double-track main stems to serve it adequately. James J. Hill had all these things in mind when he made his definite statement as to the financial needs of the railroads of the United States during the present

decade. And he did not need to give consideration to the abnormal traffic which the great war has given to our railroads. The normal development of the West, its gigantic possibilities, were sufficient to convince that man of great vision, to set his ready pencil at statistics.

As a matter of fact and in view of the record of these past half-dozen years, the average well-posted railroader of today will tell you that Hill was only conservative in his estimate. But, being even more conservative ourselves, let us allow that, if the railroads had been unhampered during the past decade, they would have expended as high as \$1,000,000,000 a year in permanent improvements.¹ Ten billions instead of four! Ten billions of dollars makes dramatic comparison even with our great trade balance that has accumulated during the European war—the excess of exports over imports already amounting to only a little over \$3,000,000,000. And as to what it would have meant to industrial America, poured out through many channels, raw materials, manufactured goods, labor—it takes no stimulated mind to imagine. The

¹ Frank A. Vanderlip, President of the City National Bank, New York city, in an address delivered in Washington, late in October, 1916, called attention to the fact that in the year just closing, \$400,000,000 had been invested in new industrials in America, but practically not a dollar for railroad investment. The only new capital which the railroads have been able to obtain has been through borrowing. On top of this Congress has taken the extraordinary responsibility of advancing the wages of the railroad trainmen. The extent of the railroad business is such that it ought to be building 200,000 freight cars a year. Last year (1915) they built 74,000, in 1916 the total was little, if any, greater. And week after week the reports are published, showing the car famine in America.

flush period into which the war has suddenly plunged us can give a fair indication.

Now consider for a moment not the possible expansion that the railroad might have made in the last decade and did not, and see how it has failed in the ordinary upkeep of its property. This last phase of its plight bears directly upon the great railroad financial problem as it exists in this year of grace, 1916—the epochal year in which the roads need to replenish their equipment; the year in which they find the doors of the money markets, open to almost all other forms of industrial investment, all but closed in their faces. By equipment, I now speak in the broad sense of the word not merely of cars and locomotives but tracks and bridges and terminals as well—the entire physical aspect of the properties. Yet take, if you will, the word “equipment” in its narrow and technical sense. The sense of railroad necessity is not lessened.

The other day the Massachusetts Public Service Commission complained that the largest of the railroads operating out of Boston was using in its suburban service some 700 wooden passenger coaches, varying in age from twenty-five to forty years. The railroad did not deny that allegation. It merely said that it had no money with which to buy modern coaches.

Its condition is typical. Week after week in the glorious autumn of the year of grace 1916, the news columns of the commercial pages of our morning newspapers were telling with unvarying monotony of the shortage of freight cars as bulletined by the American

Railway Association—100,000 this week, 75,000 last, 150,000 next—who knows? The merchant and the manufacturer know. They know in shipments of every sort delayed; in the delays running into sizable money losses week upon week and month upon month.

It may not be able to convince them that at the close of the fiscal year 1914—the period upon which we are working—there were upon the roads of the United States 2,325,647 freight cars, a number which, although greatly added to since that date, has not yet been made adequate for the normal traffic demands of the country.¹ And a large proportion of these cars are both obsolete and inadequate. In 1914, out of the 2,325,647 freight cars some 347,000 were of a capacity of but 60,000 pounds or under—a type today considered obsolete by the most efficient operating man. A great majority of this latter number of cars was of all-wood construction. If the financial condition of the railroads had permitted, they doubtless would have been replaced long since with all-steel cars of far greater carrying capacity. This situation in the freight-car equipment is reflected in larger measure in the passenger-car and locomotive situation. There are railroads in the United States that today are compelled

¹ "In the five years, ending with 1906, the number of locomotives ordered by the railroads of the United States was almost 22,400, or almost 4,500 per year. During the five years, ending with 1916, the number ordered has been less than 14,000, or about 2,800 a year.

"In the five years, ending with 1906, the total number of freight cars ordered was almost 1,100,000, an average of over 218,000 a year. During the five years, ending with 1916, the number ordered has been only about 740,000, or an average of about 148,000 a year."—*Railway Age Gazette*.

by the exigencies of a really serious situation to operate locomotives whose very condition is a menace not only to the men who must ride and operate them but also to the passengers in the trains they haul. The annual number of serious delays that may be charged to "engine failure" is appalling.¹

Now consider "equipment" in its broader sense. Expert railroaders will tell you that save in the case of the larger and more prosperous roads, there has been, in the course of the past seven or eight years, a serious depreciation in the maintenance of the way and structure of the railroad. In the prosperous years from 1901 to 1907 a very great improvement was made in this physical feature of the railroad. In the last of these years the American railroad reached the highest standard of physical perfection that it has ever known.

In 1907 came the great panic. It made drastic econ-

¹ The winter which ushered in 1917 has seen not only great freight congestion, and in consequence many embargoes, but a serious impairment of passenger service, particularly in the northern and eastern sections of the United States. This impairment has taken the form of constant and irritating passenger train delays. These have come despite a winter more mild and open, particularly in the East, than we have had for a number of years. They have been so constant and so pronounced as to arouse much comment as to their possible causes. By some they have been attributed to labor disaffection, and by others, to the congestion caused by the abnormal movement of freight. But the railroaders who know best feel that the real cause is in "engine failure." In the hard years of stringent economy through which our carriers have just passed they not only failed to purchase sufficient new locomotives, but to repair and maintain properly the ones already in their roundhouses. And in February, 1917—after eighteen months of grilling traffic—these locomotives have begun to bend and break under the strain. After all, a locomotive is not so very much different from a man. There comes a limit to its endurance.

omies immediately necessary. The railroads in their anxiety to meet, first, their dividends, and second, their interest obligations, pinched maintenance to the extreme limit. This was effective in two ways: In the first place the great preponderance of roads did not have earnings to make ordinary improvements, nor credit to provide the capital charge that would apply for improved rights of way, bridges, stations, freight houses, shops, and the like. Expert track engineers say that the loss in the maintenance of line during these lean years in Egypt that have just passed will average at least \$2,000 a mile. Multiplied by a total of 245,000 miles of railroad line in the United States this means that the railroads are "back" in the upkeep of their lines alone some \$491,788,000.¹

An expert railroader of my acquaintance takes this

¹ "Some question has been raised repeatedly as to whether the condition of railroad net earnings really has been the cause of the decline in new construction, and in the acquisition of new equipment. For example, in the hearings before the Newlands Committee at Washington some of the members of the committee have called attention to the fact that the stocks of many of the better managed and more prosperous railroads have steadily sold above par, that their bonds also have commanded what seem to the questioners figures which indicate a good market for bonds, and it has been asked whether any cases can actually be cited where strong railroad companies have sought and have failed to sell at good prices securities to raise money for improvements. Points of this kind having been raised, the *Railway Age Gazette* recently addressed a letter to the presidents of several of the leading railroads of the country, asking them to give specific examples of how the condition of earnings and of the money market during recent years has interfered with their raising money for extensions and improvements. There has not been time as yet for replies to all these inquiries to be received. Some have been received, however, and they contain significant information. One letter which has been received is from the president of an important and relatively strong,

great figure—considerably exceeding the cost of the Panama Canal—adds to it as representing a carefully ascertained deficiency in the replacement of rolling stock an almost equal sum—\$445,940,586. To these he further adds the dividends paid by the solvent roads out of their surpluses during the seven hard years—\$784,563,406—and the depreciation of the value of the securities of the roads in bankruptcy during the same period—\$719,528,328. The total of these four great items is \$2,441,820,320—a sum instantly comparable with that of the national debt.

There is, however, from a bookkeeping standpoint, at least, an offset against these losses in the equipment account of \$394,736,506 which has, under a wise ruling of the Interstate Commerce Commission, been

prosperous and conservatively managed railroad in the Northwest. He says in part:

“‘This company has been for some time, and is now desirous of building about four hundred miles of extensions of its railroad in sections of the Northwest that are not at present adequately served by transportation facilities; but, because of its inability to dispose of its securities, at a price that, as a business proposition, would warrant their sale, has been unable to make these much needed extensions.

“‘Until within the past few years this company was able to dispose of its four per cent bonds at approximately par, and in common with other first class securities, these were considered by the purchasers to be a good investment; but in the last few years we have found it practically impossible to dispose of these bonds at a price that would meet the demands of an economical and proper administration of its financial affairs.

“‘In 1915 in order to secure funds required for needed improvements and betterments, we were compelled to issue bonds drawing five per cent, and for improvements on our Chicago division we were unable to find purchasers for its bonds, and were compelled to issue notes due in three years, bearing interest at five per cent for that purpose.’

“Another letter which has been received is from the president of

charged to expenses during the seven years and set up as a reserve to meet the accruing deficiency of equipment. However, there have been no restrictions as to the maintenance of this fund, or how it should be handled. The very prosperous lines—representing some 100,000 miles, or less than half the total mileage of the country—probably have their contribution to this depreciation fund as an asset. In the case of the poorer roads—speaking financially—it doubtless has been applied to other purposes, in order to help them maintain their bare existence. It has come home to these, and with great force, that the governing conditions which make their income fixed take little cognizance of the vast annual increases in material, in tax, and in labor costs. In rough figures—decidedly rough, it seems to me—it has been estimated that the losses

one of the greatest railroad systems, not only of the eastern part of the United States, but of the world, a system which has been managed with notable conservatism and ability, and which has regularly paid substantial dividends. The president of this railroad says:

“‘Relying to your letter regarding cases where railroads had found it impracticable to do any new construction work because of their inability to get the public to invest in their securities, much depends upon how this question is put. Railroads cannot issue bonds and stock and throw them on the market to discover whether the public will take them or not. I know of no instance where any company with sound credit and good earnings had any difficulty in selling its securities to the public, provided the rate was satisfactory, compared with others, but there have been very many cases where the railroads have discovered, through consultation with investors and bankers, that there was no market for railroad securities, except on terms too onerous for the railroads to accept, and, further, because many railroads, including our own, suffered such a reduction in earnings that they were not warranted in offering securities to the public or proceeding with large items of construction work or large orders for equipment.

“‘For instance, in the case (of an important subsidiary property), I

of our railroads during the past ten years alone have amounted to approximately one-half the entire cost of the Civil War. That figure is impressive—it is little less than appalling.

Even with the depreciation accounts of the American railroads deducted as an asset, we still have this awe-inspiring total of \$2,000,000,000 confronting us. Some of this—the unpaid dividends of more than seven attenuated years—is water that will never come to the mill again. But the neglected rights of way, the ancient buildings, and the bridges needing rehabilitation on some of our railroads, the locomotives and the cars travel-racked and fairly shrieking for repairs, are all of them physical matters that must be set right before the sick man of American business can stand firmly on his feet once again. And when these things are done, the railroad will stand physically just where it stood from eight to nine years ago. And who can deny that it should stand nine years ahead of 1917 instead of nine years behind it?

know that for a long period we had to defer selling bonds on more than one occasion, although the construction work was proceeding, because market conditions were not favorable. Its mortgage bonds would be guaranteed by (its owners), but in lieu of selling them, we temporarily authorized short-term borrowing at lower interest rates. For the period 1908 to 1915 the general experience of most of the railroads was that they had not sufficient business, or earnings, to furnish a credit basis to make proper additions to their property and equipment, nor was there sufficient prospect of any increased traffic to justify proceeding with any great expenditure program. During this period, short-term financing had to be resorted to because of the impossibility of selling capital stock on any basis, or mortgage bonds, except on onerous conditions.'”— *Railway Age Gazette*.

CHAPTER III

ORGANIZED LABOR—THE ENGINEER

SO much then for the physical condition of the railroad as it exists today—the condition that constantly is being reflected in its inability to handle the supertides of traffic that, in this memorable winter that ushers in 1917, are coming to its sidings and to the doors of its freight houses. Consider now the condition of its great human factor—its relations with its employees. I am sure that you will find this, in many ways, in quite as deplorable a condition as the track and physical equipment. It is a condition that steadily has grown worse, instead of better—and this despite a constant improvement in the quality of the individual men in railroad service.

There is not an honest-speaking railroad executive all the way across the land who cannot tell you that he would a dozen times rather deal with the average individual railroader of today than with the average individual railroader of, let us say, a quarter of a century ago. With the railroader's boss—his grand chief and any of the smaller chiefs—well, here is a far different matter. But there has been a steady improvement in the quality of railroaders—of every sort and degree.

If you have traveled upon our steel pathways for twenty years or more you must have noticed that

yourself. The transition of the rough-looking, rough-speaking, rough-thinking brakeman into the courteous trainman comes first to my mind. And if the old-time conductor with lantern on his arm has disappeared, there has appeared a diplomat in his stead, a gentleman with whom we are soon to become a little better acquainted. We still have railroad wrecks, some of them admittedly the fault of the engineer. But apparently we have ceased to have railroad wrecks due to the fact that there was a drunken man in the engine cab. The last serious wreck where this accusation was made was near Corning, New York, on the night of the Fourth of July, 1912. More than forty persons lost their lives in a rear-end collision and the railroad which paid the damages, both in money and in reputation, did its very best to follow up a suspicion in its mind that the engineer of the second train was drunk when he climbed into its engine cab. It was never able to prove that charge. And one of the best things that you may say about that extraordinarily well-organized union—the Brotherhood of Locomotive Engineers—has been its unceasing efforts to drive out drinking among its members. Its record along these lines is of unspotted cleanliness.

Do you happen to know of Rule G, that stringent regulation in the standard rule books of the operating departments of the railroads of America, which is written not alone against the use of liquor by employees when on or off duty but also against their frequenting the places where liquor is sold? Time was when the abuse of Rule G sometimes was winked at, upon cer-

tain roads. That time has passed. Today it is perhaps the most stringently observed of all the manifold commandments in American railroading. And the influence of the Brotherhood of Locomotive Engineers has done much toward consummating that very end.

A little while ago an engineer running on one of the soft-coal roads of West Virginia suspected one of his fellows in the engine cab of drinking. It disturbed him more than a little. Finally he went to the man.

"Jim," said he, in the course of their heart-to-heart talk, "you've simply got to cut out the stuff or—"

"If I don't, what?"

"If you don't I'm a-goin' to take it up at the lodge. You know the Brotherhood's against that sort of thing."

Jim laid his hand upon the other's arm.

"Don't do *that*," he protested. "I'd a whole sight rather you'd report me, if you feel that you've got to report me, to the superintendent."

There was no doubt in that engineer's mind as to the stand of the biggest of the brotherhoods on Rule G. Nor is that stand based entirely on sentiment. The men who stand at the head of the Brotherhood of Locomotive Engineers never lose sight of the responsibility that rests upon the man in the engine cab. It is one of the strongest arguments which they may use in their appeals for increased wages. It is an argument which meets with ready and popular approval in the minds of the public which rides back and forth upon the railroad trains of America. And no stronger support can be offered by the strongest of their organizations than

an adherence to Rule G that is practical as well as theoretical.

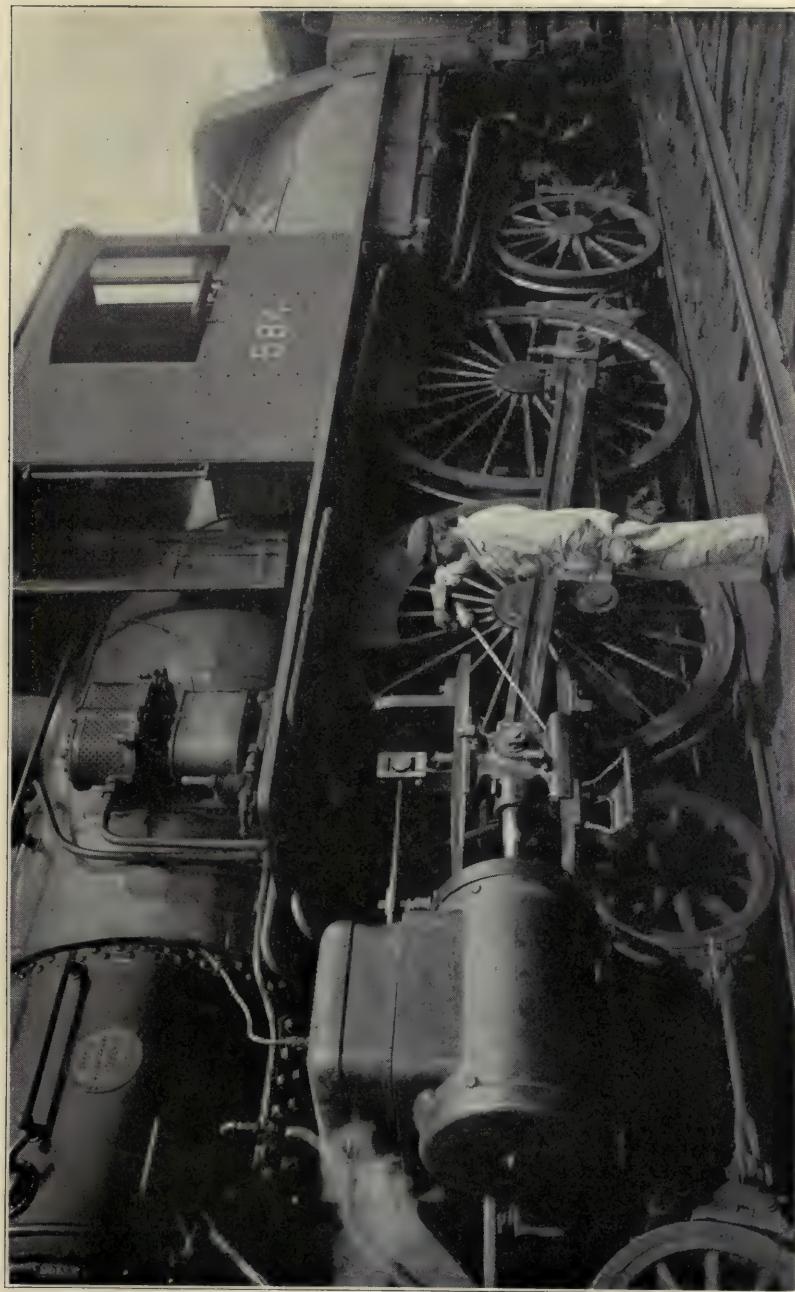
Responsibility in the engine cab! Who is going to deny that the engineer has a superb responsibility—from the moment when he arrives at the roundhouse and signs for and receives his engine to the moment when he "checks out" at the terminal at the far end of his run? To the better appreciate the fullness of such responsibility, one would do well to climb into the cab of one of our fast trains and watch the man there at his task. So, if you would know something of the man in the engine cab, come and ride a little way with him. It is not easily arranged. The railroaders have grown very strict in the enforcement of the rule which forbids strangers in the engine cabs. It is one of the ways in which they have been tightening their safety precautions. Yet in this one instance it can be arranged. You sign tremendously portentous legal "releases," whose verbiage, freely translated, gives you the distinct impression that you are going to your sure doom. But you are not. You are going to ride with Jimmie Freeman, crack passenger engineer of one of the best and the biggest of our eastern railroads. You are going to have a close look at the man in the engine cab.

Forty minutes before the leaving time of Freeman's train her big K-I engine backs into the terminal from the roundhouse and is quietly fastened to the long string of heavy cars. The engineer went over the big, clean, lusterless mechanism before it left the inspection-pit at the roundhouse. It is part of his

routine; part of his pride as well. And even though it cuts him out of a Sunday dinner with his folks in the little house at the edge of the town, he prefers that it be so. In his simple, direct way he tells you that he has the same satisfaction in speeding a locomotive on which, by personal inspection, he knows that every bolt and nut is in the proper position, that a crack chauffeur has in speeding a good car up the boulevard knowing that it, too, is in condition—engine, driver, axles, all the hundred and one friction parts that must work truly, even at high speed and under the great heat that high speed generates in a bearing.

For remember that Freeman's limited is a crack train—its name a household word at least halfway across the land. He came to it five years ago—a prize for an engine-runner who had judgment, who had kept a good "on time" record for eight years with a less important passenger train; a man who knew the complications of a locomotive as you and I know the fingers of our two hands. It was not a "seniority" appointment. The "seniority" jobs come to the very oldest of the passenger engineers who, because of the very length of their service, are permitted to pick and choose the runs that would suit them best. These rarely are the very fast runs. They are more apt to be some modest local train making its way up a branch line and back, where there is little congestion of traffic and a throttle-man's nerves are not kept on edge every blessed moment that he is on the job.

Jimmie Freeman did not pick his job. It picked him. It picked him because he had nerve, a steady head,



THE ENGINEER
Oiling is too important a matter to be depated, so he attends to it himself.

good physique, a knowledge of the locomotive and of all of its whims and vagaries. And if his is one of the hardest jobs on the big road for which he works, he is perhaps only one of a half-thousand passenger engineers it might pick from its ranks and find fully able to measure to it.

An air signal over the engineer's head rasps twice; a starting signal. He pulls out the throttle ever and ever so little a way—a distance to be measured in inches and fractions of inches—and the limited is in motion.

"We're sixty seconds late in getting off," says Freeman as he replaces his watch and settles down for the forty-mile pull up to B——, the first stop and scheduled to be reached in forty-three minutes. That means, with "slow orders" through station yards, as well as one or two sharp curves and a steep grade midway, that Jimmie will have no time to loaf on the straightaways—he calls them "tangents."

"Green on the high," says the fireman, as the big K-I ducks her head under a signal bridge and her pilot trucks find their way to the long crossover that brings her from the platform track in the tangle of the terminal yard over to a "lead-track," which in turn gives to the "main," stretching out over the sunshiny open country to distant B——.

"Yellow on the low," calls the fireman again as the engine slips under still another signal bridge and finds her way to the long, unbroken sweep of the beginning of the "main." Freeman repeats the signals. For his

part he is supposed to read them all the way to P——, where his run ends and the limited goes, bag and baggage, upon the rails of a connecting road. He is supposed to read, the fireman to repeat. As a practical thing it is sometimes out of the question. The cab of the big passenger puller is far from a quiet place. There is the dull pound of the drivers over the smooth rails, the roar of the great fire between them, the deafening racket of the forced draft that pours into it. The cab does not lend itself to conversation. But if Freeman does not repeat the signal indications audibly he does it mentally. It is part of his job. And the mere repeating of the signal does not assure safety.

Once, a number of years ago and upon another railroad, I rode in the cab of a fast passenger train. The road ran straight for many miles and across a level country. Each mile of its path was marked by a clock signal, gleaming against the night. The engineer shouted each of those signals, and his fireman echoed them back.

“White,” he would call—for white was then the safety color, not the green that has been almost universally adopted now.

“White it is,” would come the reply. And in another mile:

“White,” and “White she is.”

And once my heart all but leaped into my mouth. The block showed red—red, the changeless signal for danger. But our engineer did not close his throttle or reach for the handle of his air brake.

"Red," he chanted in his emotionless fashion; but the fireman altering his echo to "Red she is," looked up for a moment into his chief's face. The chief never moved a muscle. Sixty seconds later he shouted again.

"White."

"White she is," repeated the fireman, and grinned as he thrust another shovelful of coal into the fire box.

After the run was over and we sat at the comfortable eating counter of the Railroad Y.M.C.A., I asked the engineer why he had run by that red signal. He hesitated a moment.

"Man alive," said he, "do you suppose I can afford to bring my train to a full stop every time one of those pesky blocks gives me the bloody eye? I could get the next two blocks and saw they were safe. I know every inch of the line, and knew that there was not an interlocking"—meaning switches and crossing tracks—"within ten miles of us. The block was out of order and I knew it. And I was right."

"Suppose there was a broken rail in that block," I suggested, "wouldn't that break the current and automatically send the signal to danger?"

The engineer did not answer that quickly. He knew the point was well taken. Finally, pressed, he said that his was a "penalty train," which meant that it carried the mail and excess-fare passengers and that it would cost his railroad dollars and cents if it were more than thirty minutes late at its final terminal. To have stopped this train flat at the red signal, when he felt morally certain and could practically see that the line was clear and open, would have cost fifteen minutes or

more. If the practice was repeated and even his detention sheets showed that the time lost was due to stopping at a signal that was out of order, he would not be censured. Oh, no! But sooner or later there would be a new man on that run—a man who had the reputation of bringing his train in on time over his division. That was what the engineer told me that night as we munched our crullers and sipped our coffee.

Freeman tells another story. Freeman says that he never ran past a red signal in his life and that he could not have held his run on the limited for five long years if he had not been in the habit of bringing her in "in her time." Freeman speaks a good word for the signals. You take note of it. Then you remember that in one of the innumerable cases that came up before the Interstate Commerce Commission down in Washington, the engineer of the Congressional Limited testified that in the five-hour run from the national capital up to the outskirts of New York he had to read and understand and observe exactly 550 signals. It was one of the things that he said made his job difficult.

Yet when this run today is over and we are standing with Freeman by the side of the turntable in the big and smoky roundhouse, as his big long-boned black baby is edging gently into her bunk for a few hours of well-earned rest, he will tell you frankly that he has a genuine affection for the 162 signals that stand to beckon him on or to halt him in his run of 135 miles up the main line.

"I just let myself think of another fairly fast run I had once—up on a side line, single-track at that, where there wasn't but two interlockings the whole distance or a single block protection from one end to the other." Then he adds, "I'd hate without the signals to pull Twenty-four at a sixty-mile-an-hour clip. To my mind they're like watchmen, with flags or lanterns every mile up the main line. Only a watchman couldn't see a mile and know of a break in the rail, the way that electric block knows it. Talk about a thing being human. That toy's better than human. It has a test record of less than one per cent of failures, and in that small failure record, ninety-eight per cent of the actual failures turned the signal automatically to danger."

On Freeman's road they do not penalize a man for failing to make his time, by finding some other excuse and then quietly removing him from his run. On the contrary, there are maximum speed limits for every mile of the main line and its branches—ways by which the road knows that the maximums are not being exceeded. And Freeman likes to quote the big boss of one of the big roads—Daniel Willard, come from an engine cab to be president of the Baltimore and Ohio Railroad. Once, when discussing this very question, Willard said:

"If there is a rule on our railroad that delays an engineman and tends to prevent his making his schedule time we want to know it—at once. If we believe the rule is wrong we will remove it. If not, and it delays the trains, we will lengthen their running time."

In fact, the steady tendency of all American roads during the past ten years has been toward lengthening schedules rather than shortening them. The two whirlwind trains between New York and Chicago now take twenty hours for the trip, instead of eighteen, as was the case when they were first installed. The famous run of the Jarrett and Palmer special in 1876, from Jersey City to Oakland on San Francisco Bay, in four days flat, still stands almost as a transcontinental record, while the fastest running time ever accredited to a locomotive— $112\frac{1}{2}$ miles an hour by a New York Central locomotive with four cars, for a short distance between Rochester and Buffalo—was accomplished more than twenty years ago.

The railroads are playing fairer with their Jimmie Freemans. The men who sit on the right-hand side of the engine cabs appreciate that. They know the responsibility that sits unseen, but not unnoticed, at the side of the man who guides the locomotive.

“We’ve passed the sixty mark,” shouts Freeman’s fireman into your ear. Above the din of the engine you catch his words as the faintest of whispers. And you look ahead at the curving track. Curving? Forever curving, and each time it swerves and the path that we are eating up at the rate of eighty-eight feet to the second is lost behind the brow of a hill or through a clump of trees, your heart rises to your mouth and you wonder if all is well just over there beyond. And then you remember that the friendly raised arm of the block semaphore has said “yes.”

The engineer's figure is immobile but his mind is alert. His touch upon the throttle is as light as that of a child. His face, half hidden behind his great goggles, is expressionless. Yet behind those same protecting glasses the windows of his soul are open—and watching, watching, forever watching the curving track. Sometimes the track curves away from his side of the cab, and then the fireman climbs up on his seat behind and picks up the lookout. But he does not pick up Freeman's responsibility.

Freeman has a high regard for signals. He never permits them to become monotonous.

"If ever I get that way, I'll know it myself," says he, "and it will be high time for me to get out."

After all, his service on this extra-fast train may not exceed ten years. A man whose nerve was not iron and his physique steel could not last one-third of that time. According to the insurance figures of the Brotherhood of Locomotive Engineers, to which Freeman and most of his fellows belong, eleven years and seven days is the average length of service for an engineer upon an American railroad. The railroad managers figure it a little differently and place the average at something over twelve years. And out in the West, where the railroads span the mountains and thread the canyons, the man in the engine cab will rarely last more than six years.

Of course the situation varies on different railroads. Before me lies the report of the Boston and Albany Railroad—impressive because of the length of the

service of the engineers of that staunch property. It is the habit of that railroad to give annual passes to the employees who have been in its service more than fifteen years. More than half of its engineers receive such passes. And early in the present year it retired from active service Engineer James W. Chamberlain, who had been in its employ more than fifty-three years. And for a dozen years past Chamberlain had been piloting two of the road's fastest trains between Boston and Springfield. You cannot always rely upon averages.

We are within five miles of B——, where our ride in the engine cab ends. Around us is the typical vicinage of a growing American town already almost great—gas tanks, factories, truck gardens, encroaching upon these the neat pattern of new streets upon which small houses are rearing their heads—close round about us the railroad yards, vast in their ramifications and peopled with a seemingly infinite number of red and blue and yellow freight cars. There is a trail of them close beside Freeman's arm. The trail culminates in a caboose which shows flags and we know that it is a freight that has just come scampering down the line into the yard—a bare five or six minutes leeway to get out of our way—out of the way of the trains whose delays mean personal reports and excuses to the "old man," a practical, hard-headed railroader who has a fine contempt for excuses of every sort.

"You writer fellows like to talk about the heroes of the engine cab," says the fireman; "the boy who is pulling that greasy old Baldwin comes nearer being a

hero than Jimmie or any of the rest of the passenger bunch."

There is nothing cryptic in his meaning. He means that the freight engineer, pulling a less carefully maintained piece of motive power, to which had been added not only its full working capacity of cars, but as many extra as an energetic and hard-pressed trainmaster may add, up to the risk point of an engine-failure and consequent complete breakdown out upon the main line, must keep out of the way of the gleaming green and gold and brass contraption that has the right of way from the very moment that she starts out from the terminal. Yet it is the freight-puller and his train that are earning the money that must be used to pay the deficit on the limited that whirls by him so contemptuously. For that proud and showy thing of green and gold and brass has never been a money-earner—and never will be. Everyone with the road says that of her. They call her a parasite and say things about Solomon in all his glory when they look at the gay flowers in her dining cars and the rampant luxury in her lounging cars—but how they do love her! It is the parasite of which they brag, and not the dull and dusty freight.

It is forty minutes since we first pulled out of the terminal and our journey with Freeman began. And now, a few blocks away and around a sharp curve to the left, is the big and sprawling passenger station at B_____, with the twilight shadows gathering beneath the roof of its expansive train shed. And Freeman has already put on the air brakes, the big engine is

feeling its way cautiously through the maze of tracks and switches while once again you hear the fireman call the signals. Three minutes later the train is halted — beside the long platform under that great and smoky shed, folk are getting on and off the cars — there is all the gay confusion that marks the arrival and the departure of an important train. But there is no confusion about Freeman. With his long-nosed oil can in hand he is around the front of "his baby," making sure that she is attuned for her next long leap up the line. Freeman takes no chances. Instead, he takes each and every opportunity for renewed inspections of his locomotive.

Responsibility in the engine cab!

One cannot deny that it exists there. One finds it hard to confound the hard fact that the engineer is worthy of a good wage — how good a wage is the only point to be determined. For responsibility must be well paid — whether it is responsibility at the dispatcher's desk, in the lonely signal tower, in the track-foreman's shanty, in any of the many, many forms of railroad operation where the human factor in safety can never be eliminated — where danger ever lurks, just around the corner and within easy reach of the outstretched hand. The engineer has his full share of responsibility. But he has no monopoly of it.

CHAPTER IV

ORGANIZED LABOR—THE CONDUCTOR

HERE is another of the well-organized and protected forms of the railroad's labor—the conductor. He will tell you that a goodly measure of responsibility rests upon his own broad shoulders. Yet your veteran railroad executive does not regard his conductor so much as a responsibility man as a diplomat. This last, after all, is his chief rôle.

You gather your brow. You do not understand.

"I thought," you begin slowly, for you have made some sort of a study of this big game of railroading, "I thought that the traveling freight and passenger agents, all that solicitous company which travels through the highways and byways of the land, the big towns and the small, seeking out traffic, for the railroad, were regarded as its diplomats."

You are partly right—partly wrong.

For the real diplomat of the railroad is multiplied in its service, far more than the freight or the passenger agents. The humblest and the rarest of passengers do not fail to see him. The man who rides on the railroad train for the first time in his life comes into almost instant touch with him. You yourself have seen him many times making his way down the aisle of the car; stopping patiently beside each of his passengers—

we use the phrase "his passengers" advisedly — greeting old friends with cheery nods; upholding the dignity of the railroad and his own authority — quietly, but none the less surely — time and time again. Here, as we shall come in a moment to understand, is a real diplomat of the railroad — an autocrat of no small authority in those rare instances where he may fail to be a gentleman. And all this stands to the infinite credit of more than 60,000 conductors in the railroad service across the land.

We have just called him an autocrat. Remember, however, that for the safe movement of his train up and down the railroad's busy lines he shares, in an important degree, the responsibility with the man with whom we have just ridden in the engine cab; but the engineer cannot very well make or lose business for his railroad unless he stops his train too sharply and too many times. The conductor — well, we are going to see him in his rôle of peacemaker plenipotentiary to the public. It, of itself, is a rôle where he can be and is of infinite value to the railroad.

Do you chance to recall the conductor of yesteryear — conceding no more than his blue cap to the growing use of uniforms in a republican country; somewhat unkempt perhaps as to clothes — yet benevolent and fatherly in his way? Did that sickly-looking woman at the end of the coach fumble and then attempt a feeble and impotent smile when he asked her for her ticket? And did he, with a sublime myopia, pass her by without demanding that bit of pasteboard? Your old-time

conductor knew the difference between impostors—even in skirts—and empty-pocketed folks to whom a railroad journey might be a tragic necessity. A few years up and down the line, the constant study of the folk within his cars quickly taught him that. And it would have been a pretty poor sort of old-fashioned railroad that would not have allowed him discretion in such cases.

Your new-time railroad allows him little or no discretion in matters of this sort. Your conductor of today, finally quite at ease in the trimness of his well-set uniform, his arm-lantern gone into the scrap heap in these days of electric-lighted cars, on most railroads has practically no opportunity to use his judgment in matters that pertain to the fares. If he lets anyone ride free on his train—and the boss learns of it—he hears dire threats about the Interstate Commerce Commission, sees the yawning doors of the penitentiary close at hand.

Railroad managements have a way of using that law for the punishment of dishonest employees. So your conductor of today lacks the power of his brethren of an earlier day. They worked in a generation when the railroad still was a personal thing. Men and families owned railroads as they might own farms or banks or grocery stores. They headed their own roads and they assumed an attitude toward their men, autocratic or benevolent as the case might be, but almost always distinctly personal. The railroad as a separate unit had not then grown beyond a point where that was possible and the big boss was a real factor in the lives of his

men. They might come to have a real affection for him—such as they had for Lucius Tuttle, when he was president of the Boston and Maine—and call him by his first name. No higher compliment can come up from the ranks to a railroad executive.

Today discretion is discrimination in far too many cases. So reads the Interstate Commerce Law about discrimination. It places discrimination in the same class with burglary and the shippers who had dealings with many of our railroads a quarter of a century ago are thanking all the political gods of the United States of America that this law was placed upon the statute-books; but it can be read too literally, just as the conductor of a modern train can be too sharp-sighted. Here is a case, which from too fine or technical a reading of the law might be read into discrimination; in reality it was an instance of real discretion on the part of the conductor.

A man—a nervous, tired man—was bound east through the state of New York upon the Lake Shore Limited. His destination was Kingston, which is situate upon the west bank of the Hudson River, almost half way between New York and Albany. The route of the Lake Shore Limited is down the east shore of the river, without a stop between Albany and New York. Anyone who knows the Hudson Valley well knows how atrocious are the facilities for crossing the river at almost any point between those two cities. This tired, nervous man planned to catch the last train of the afternoon down the West Shore Railroad from Albany to Kingston. Under normal conditions he had

about thirty minutes' leeway in which to make the change; but on this occasion the Lake Shore Limited was a little more than thirty minutes late and he did not alight at Albany—he had no wish to hang around there until some time in the early morning. He decided that he would go through to New York, cross the city from the Grand Central Station to Weehawken and then go through to Kingston on a night train. This meant 180 extra miles of travel; but the man was in a very great hurry and with him time counted more than miles.

As his train swept across the bridge and out of Albany the conductor came through. He was a round, genial-faced fellow, typical of that other generation of train captains that one often finds upon the older railroads of the land; and the man from Kingston halted him—told his story very much as we have told it here.

"I didn't know but that, if you were going to stop for water at Poughkeepsie, I might slip off some way," he finally ventured. "That would leave me less than twenty miles from home."

The conductor did not hesitate.

"We don't stop at Poughkeepsie—for water or anything else," he said. "But I'll stop at Rhinecliff for you."

Rhinecliff is on the east bank of the Hudson, directly opposite Kingston. That seemed too good to be true—and the man stammered out his thanks.

"I didn't think you'd stop this crack train for anybody," he said quite frankly. "The time card doesn't—"

"This train stops for the proper accommodation of the patrons of this road," interrupted the conductor, "and I'm its high judge. You lost out on your connection at Albany through no fault of yours. It was our fault and we are doing our best to make it up to you."

Consider the value of such a man to the organization which employs him. That little act was worth more to the big railroad whose uniform he bore than a ton of advertising tracts or a month's service of its corps of soliciting agents. The Kingston man crossed the river from Rhinecliff in a motor boat and thanked the road and its conductor for the service it had rendered him. He was a large shipper and his factory in the western part of the state is in a hotly competitive territory; but the road that through the good sense of its employee had saved him much valuable time today hardly knows a competitor in his shipping room.

Discrimination? Your attorney, skilled in the fine workings of the Interstate Commerce Law, may tell you "Yes," but we are inclined to think he is wrong, for the man was not permitted to alight at Rhinecliff because he was anything more than a patron of the road. He had no political or newspaper affiliations to parade before the conductor; he did not hint at his strength as a shipper, he did not even give his name. If there is discrimination in that, I fail to see it.

A certain man took a trip from New York to Chicago three or four years ago. He went on a famous road, well conducted, and he returned on its equally famous competitor. Each road had just conquered a

mighty river by boring an electrically operated tunnel underneath it. The tunnel had been well advertised and the man, whose mind had a mechanical turn, was anxious to see both of them. In each case the train bore a wide-vestibuled day coach as its last car.

In the first tunnel through which he passed he went to the rear of the day coach with the intention of taking a look at the under-river bore. He wanted to stand at the rear of the aisle and look through the door at the electrically lighted tube. But the conductor anticipated him. He drew down the sash curtain of the car door.

"Sorry," he said, "but the company's rules prohibit passengers from standing in the aisles."

One might write a whole chapter on the thoroughly asinine rules that some roads have made for the guidance not only of their employees but of their patrons as well. But this man did not argue. He bowed dutifully to the strong arm of the rule book and went back to his seat—thoroughly cowed. But how different was the case on the other railroad, by which he returned from Chicago! This second time he went to the rear of the train, recalling his first experience and the rebuff he had received. But this road and its conductor were of a different sort. This second conductor was fastening the outside doors of the vestibule at the rear of the last car and saying to the little group assembled there:

"If you will wait a minute I will give you a chance to get out on this rear platform and see the big job we've been working on so long. We all of us are mighty proud of it."

How much of an asset do you suppose this conductor was to his company?

By this time the new-fangled railroad executive who reads this will be filled with disgust.

“Doesn’t he know,” I can hear him say, “that railroading has taken some pretty big strides within the past fifteen or twenty years? We’re perfecting; we’re systematizing. We’ve studied the motions of the brick-layer and we’re dabbling in efficiency. We’ve modeled our railroads after the best of the standing armies of Europe and we’ve begun to move men like units. That means that we’ve no room in railroad ranks for individualists. An individualist never makes an ideal unit and the new efficiency demands units—not thinkers!”

Does it? In the minds of a good many railroaders of the newer schools it seems to. Yet some of these very same railroaders were overjoyed a little time ago — when the half-baked Adamson eight-hour law was being jammed through Congress — to see out from the Middle West, from the rails of the Santa Fé, the Union Pacific, the Milwaukee roads, veteran conductors coming forward, who not only did not hesitate to speak their minds against the measure, but actually sought out injunctions against it. What it might cost these men in prestige and in the affection of their fellows, in possible punishments by the lodges of their brotherhoods, the outside public may never know. It can be fairly assured that the price was no small one.

Would the railroad executives of the Middle West have preferred that these men be units, rather than individualists? I think not. The truth of the matter

is, that in its very desire to stand straight, the new school of railroading sometimes leans backward. We will grant that in the coming of the great combinations of new-time railroads it was a mighty good step to eliminate the haphazard, wasteful, inefficient old school of personal railroading. Consolidation has effected some wonderful working advantages in the operation of our giant systems, and it is a grave question whether today, with the margin between income and operating cost constantly narrowing, if the eggs were unscrambled and the famous little old roads returned, they could be operated long and dodge the scrawny fingers of receivership. Yet it is a fact that if they have gained in many ways by consolidation and centralization, they have lost something definite in the personal feeling which used to exist between their men and themselves. It was an asset that could hardly be expressed in dollars and cents.

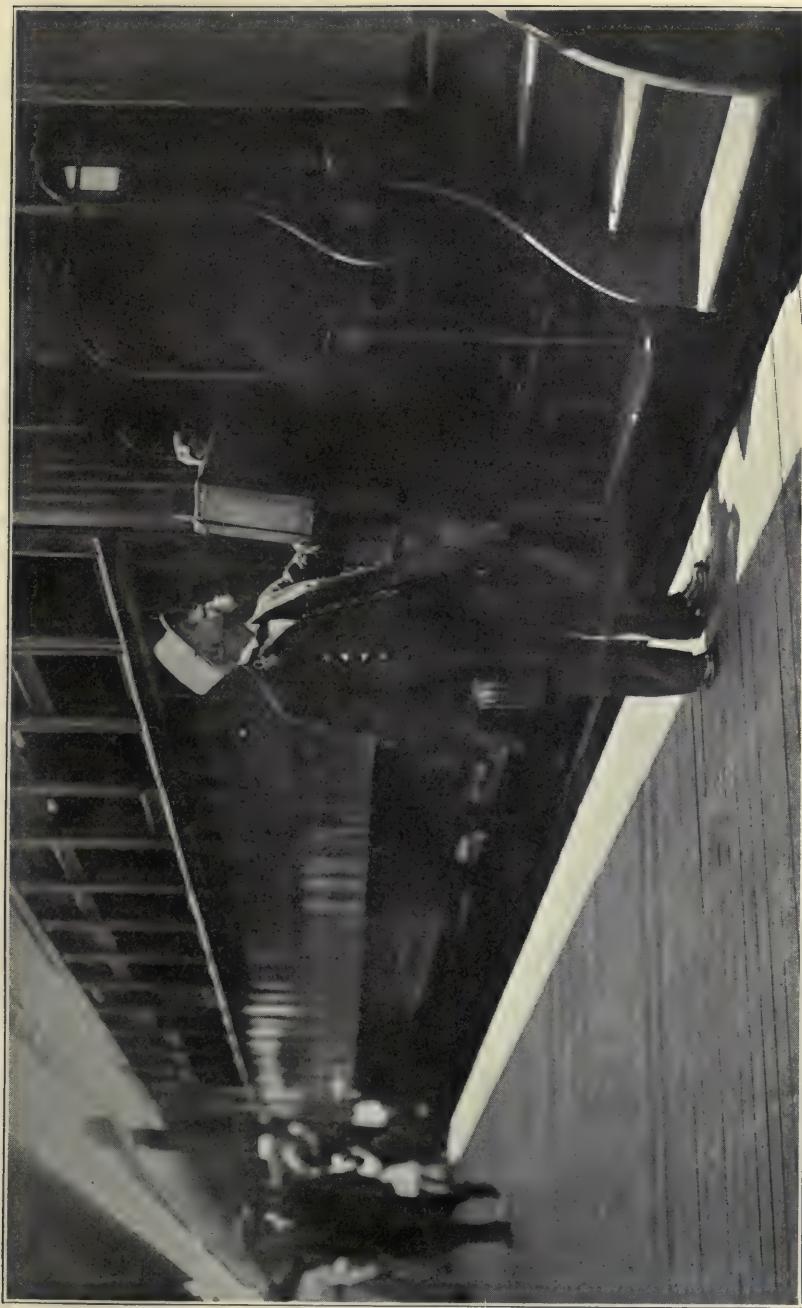
After the New York, New Haven, and Hartford Railroad had absorbed the famous Old Colony—down there in the southeastern corner of Massachusetts—it was five years before its conductors ceased to know it and to love it as the Old Colony. To older conductors the Panhandle and the Lake Shore are still as real and as vital as if those beloved names still appeared upon the rolling stock. Measure such an asset in dollars and cents if you can! You cannot, thank God, place a valuation upon such assets as affection and loyalty.

So to your first qualities of dignity and authority and discretion—in these days we dare not call it discrimination—supplement those of affection and of loyalty.

And to these add that of ability; for a conductor's entire work is not merely collecting his tickets and keeping the passengers of his train in good humor—though sometimes this last is a man's job by itself. He must bear in mind that Bible of the railroad—the time card—the place his train takes upon it; its relation to every other train, regular and special, on the line. His mind must be—every minute that he is on the road—a replica of the dispatcher's, working in perfect synchronism with that of the controlling head who bends over the train sheet back at headquarters. This work, comparatively simple on a double-track line, becomes, in many instances, tremendously complicated upon the many miles of single-track railroads that still bear a heavy traffic up and down and across America.

The "opposing trains" to be met and passed; the slower trains moving in the same direction to be overtaken and also passed; the complications of special movements—all these must be borne in accurate correlation as the conductor passes up or down the line. He may have extra cars to his train and an extraordinarily difficult crowd of passengers to handle, but he cannot for a moment ignore the most minute detail of the flimsy messages that are handed to him during the entire length of his trip. And back of his specific orders for the day he must ever carry the entire scheme of the division's operation.

So here you have the passenger conductor—a real knight of the road, if you please—careful, discerning, courageous; a rare diplomat; perhaps in this commercial day of big things the spirit of the skipper of the



THE KNIGHT OF THE TICKET PUNCH
Courtesy, diplomacy, helpfulness, are quite as much parts of his job as anything else. He is a distinctive American figure; no railroads elsewhere have his counterpart.

famous old-time clipper ship incarnate! He is worthy of the great railroad empire of the world. In Europe, the state railroads of Germany and of France, the short, congested lines of Great Britain have not his counterpart. He is a product both of our nationalism and of the hard necessity that has hedged him in. And, in passing, it is worthy of note that some of the men who sit today in the highest executive positions of the greatest of our railroads have stood their long, hard turns with the ticket-punch. A recent and a peculiarly gifted chairman of the Interstate Commerce Commission—Edgar E. Clark—was for many years a passenger conductor; his pride in his calling of those earlier years is unbounded.

Here I have shown you in a word the two strongest of the four types of railroad organized labor. For while there are organizations among some other forms of the railroads' employees, switchmen, telegraphers, and the like, it is the engineers, the firemen, the conductors, and the trainmen who hold the whiphand of authority over the railroad executive and the politician alike. They have a power that is to be feared—they have said it themselves. And the politicians, the public, a good many of the biggest railroad executives have believed it. Once in a while you will find a railroad executive—like that stern old lion, Edward Payson Ripley, who brought the Santa Fé Railroad out of bankruptcy into affluence and became its president—who states his disbelief and states it so plainly that there can be no doubt as to its meaning. For a long time Ripley has seen the handwriting on the wall. And so seeing,

he has had small patience with the weak-kneed compromise that invariably has followed the so-called recurrent crises between the four big brotherhoods of the railroads and their employers. There is nothing weak-kneed about Ripley and the rapidly growing group of executives rallying about him. It must come to an issue, open warfare if you please. In such a war either the railroads or their labor will win. But upon the victory, no matter how it may go, definite economic policy may be builded. You cannot build either definite or enduring policy upon compromise. Our own Civil War and the weak-kneed years of compromise that preceded it ought to show that to each of us, beyond a shadow of a doubt.

We are just passing through one of the periodic "crises" between the railroads and their four big brotherhoods. These "crises," which, up to the present time at least, have always ended in wage adjustments of a decidedly upward trend, are apt to be staged on the eve of an important election. They invariably are accompanied by threats of a strike—the German *der Tag* reduced to an American rule of terror. These threats are so definite as to leave nothing but alarm in the public breast.

Then arbitration may be brought to play upon the situation. There is a vast amount of understanding—accompanied by a still greater amount of misunderstanding. The big leaders of the big brotherhoods are no fools. They are skilled in the new-fangled science of publicity. And so are the railroads. Yet finally the

men get their increased wages—or a good part of what they have asked. And finally the cost is slipped along to the public, in the form of increased passenger fares or freight tariffs. Then, sooner or later, the brotherhood railroad employee feels the increased cost of transportation distinctly reflected in his own rising cost of living. He feels it distinctly, because an instinctive idea of the manufacturer or the distributor is to add on the transportation cost to his manufacturing and selling cost, with something more than a fair margin. Thus a general increase of five per cent in freight rates may only mean that it costs a fraction less than two cents more to ship a pair of shoes from Boston to Cleveland. But the manufacturer in Boston is tempted to add five cents to his selling cost—to cover not only the increase in transportation, but other manufacturing-cost increases, less definite in detail but appreciable in volume. The wholesaler, under the same pressure from a steadily advancing cost of maintaining his business, makes his increase ten cents, and the retailer, not immune from the same general conditions which govern the manufacturer or the wholesaler, protects himself by placing an extra charge of twenty-five cents to his retail patron. If the final patron—the man or the woman who is to wear the shoes—protests, the retailer informs him that the recent increase in freight rates—well advertised in the public prints—is responsible for the new selling price. So has the increase in freight rates been magnified—both in reality and in the public mind.

It is when the brotherhood man or his wife or

daughter buys the shoes that they begin to pinch—economically, at least. It is not only shoes, it is clothing, it is foodstuffs, it is coal—the pressure gains and from every quarter. Then the brotherhood man—engineer or conductor or fireman or trainman—rises in lodge-meeting and demands a better wage. His margin between income and outgo is beginning to narrow. He has a family to rear, a home to maintain—a pride in both. In the course of a short time the men at the top of the brotherhoods feel this mass pressure from below. They must yield to it. If they do not, their positions and their prestige will be taken away from them. So they get together, decide on the amount of the relief they must have, and begin their demands upon the railroads. And when the railroads, with their well-known cost sheets ever in front of them, show resistance, the threats of strike once again fill the air. Gentle, peace-loving folk of every sort become alarmed. There is turmoil among the politicians, of every sort and variety. After that, arbitration.

President Wilson in his recent address to Congress, in his accurate, authoritative way, laid great stress upon this very point of arbitration. He had laid stress upon it in the crisis of September, 1916—when it looked as if railroad union labor and the executives of the railroads had come to an actual parting of the ways—and the country was to be turned from threats into the terrorizing actuality of a strike. Only Congress, which seems rarely able to realize that it can ever be anything else than Congress and so bound to its traditions of inefficiency, chose to overlook this portion of the Presi-

dent's solution of the situation. It granted the eight-hour day—so called—but it was deaf to arbitration.

Said President Wilson in his address:

To pass a law which forbade or prevented the individual workman to leave his work before receiving the approval of society in doing so would be to adopt a new principle into our jurisprudence, which I take it for granted we are not prepared to introduce. But the proposal that the operation of the railways of the country shall not be stopped or interrupted by the concerted action of organized bodies of men until a public investigation shall have been instituted which shall make the whole question at issue plain for the judgment of the opinion of the nation is not to propose any such principle.

The President is nearly always right—particularly so in domestic affairs. But never, in my knowledge, has he expressed himself with greater vigor and strength than in this particular instance. Not that the principle is apt to be popular—quite the reverse is probable. There are employers of a certain type, also employees of a certain type, whose bitterness against any fair measure of arbitration is unyielding. The great railroad brotherhoods have never shown any enthusiasm over the idea, despite the fact that the two countries in which arbitration is strongest and most successful—Australia and New Zealand—are controlled by organized labor.

There are railroad executives also who have been opposed to arbitration save where they might manipulate it to serve their own selfish ends. But these are the types of railroad chiefs who are beginning to disappear under the new order of things in America.

Theirs was another and somewhat less enlightened generation—particularly in regard to social economics. And even in the railroad the old order is rapidly giving way to the new.

There is a class in America which enthusiastically receives arbitration—compulsory arbitration—and demands that it be extended in full to the railroad, as well as to every other form of industrial enterprise. I am referring to the average citizen—the man who stands to lose, and to lose heavily, while a strike of any magnitude is in progress. He is an innocent party to the entire matter. And he must be protected—absolutely and finally.

That is why we must have arbitration—compulsory arbitration, for any arbitration which is not compulsory and practically final, is useless. We have had the other sort already and it has brought us nowhere. We had arbitration of the uncompulsory sort before the critical days at the end of last August. In the final course of events both the railroads and their brotherhood employees ignored it. And the average man, the man in the street, was ignorant of the fact that it had even been tried.

After that sort of arbitration comes compromise, and compromise of that sort is a thin veil for failure. And failure means that the whole thing must be gone over once again. The circle has been completed—in a remarkably short space of time.

It all is a merry-go-round, without merriment; a juggernaut which revolves upon a seemingly unending path. Yet he is a real juggernaut. For while the

brotherhood man may seek and obtain relief upon the lines which I have just indicated—how about the salaried man outside the railroad? And how about the man inside the railroad whom no strong brotherhood organization, no gifted, diplomatic leader of men protects? It is this last class—the unorganized labor of the railroad, that I want you to consider for a little time. It is obviously unfair, from any broad economic standpoint, that these men, far outnumbering the organized labor of the railroad, should be ignored when it comes to any general readjustment of its wages. Yet, as a matter of fact, this is the very thing that has been coming to pass. And today it is one of the most pronounced symptoms of weakness in the great sick man of American business.

CHAPTER V

UNORGANIZED LABOR—THE MAN WITH THE SHOVEL

IN choosing the engineer and the conductor as the two very best types of organized labor upon the railroad I have had in mind the special qualifications that go with each. With the engineer one instantly links responsibility. And I think that in a preceding chapter I showed you with some definiteness that responsibility is never far from the engine cab. With the conductor one touches the diplomat of the rank and file of railroad service—one of the most frequent of the railroad's touching points with the public which it aims to serve.

How about unorganized labor—the great groups of railroad workers who have no brotherhoods to look out for their rights or to further their interests? Has organized labor a monopoly of responsibility or of diplomacy? I think not. And if you will permit me, I shall try to show you an unorganized worker whose responsibility is quite as constant and as great as that of the men in the engine cab. This man is the one who makes the path for the locomotive safe—he is the track foreman, or section-boss. And the station agent, not of the metropolitan city but rather of the smaller cities or even the villages that multiplied many times make up the America that we all know, may yield

nothing to the conductor in diplomacy. Of him, more in the next chapter.

Consider first, if you will, the section-boss — the man who makes the steel highway safe for you and me each time we venture forth upon it. It is obvious that no amount of brains in the engine cab, no skill, no sagacity, no reserve force, is going to compensate for a neglected track. A single broken rail may send the best-driven locomotive in the world into the ditch beside the right of way, a mass of tangled and useless scrap iron. The section foreman knows this. And knowing it does not diminish his own sense of responsibility.

Sometimes when you sit in the observation end of the limited and look back idly upon the retreating landscape you will see him, shovel in hand, standing beside the track and glancing in a dazed fashion at a fast-flying luxury which he has never enjoyed. He seems, at first sight, to be a fairly inconsequential part in the manifold details of railroad operation. Yet it would be well if you could come a little closer to this important human factor in the comfort and the safety of your trip; could understand more fully the difficulties of his work. First you would have to understand that from the very hour the railroad is completed it requires constant and exacting care to keep it from quick deterioration. Continual strains of the traffic and the elements, seen and unseen, are wearing it out. Temperature, wind, moisture, friction, and chemical action are doing their best to tear down the nicety of the work of man in building the best of his pathways. The effects of

temperature — of the wonderful range of heat and cold which the greater part of America experiences and sometimes within a remarkably short space of time — are to expand, contract, and oftentimes to break the rails; to sever telegraph lines, the maintenance of which is so vital to the safe conduct of the railroad; to disrupt the equally important signal service.

A single flat-wheeled freight car went bumping up a railroad side line in Minnesota on a zero day a few winters ago and broke so many rails that it was necessary to tie up the entire line for twenty-four hours, until it could be made fit for operation once again.

Track looks tough. In reality it is a wonderfully sensitive thing. Not only is the rail itself a sensitive and uncertain thing, whether it weighs 56 pounds to the yard or 110 pounds to the yard, but the ballast and the ties, and even the spikes, must be in absolute order or something is going to happen, before long, to some train that goes rolling over them. A large percentage of railroad accidents, charged to the account of the failure of mechanism, is due to this very thing. Therefore the maintenance of track alone — to say nothing of bridges, culverts, switches, and signals — becomes from the very beginning a very vital, although little understood, feature of railroad operation.

Here then is the floor-plan of the job of the man who stands there beside the track as you go whizzing by and who salutes you joyously as you toss a morning paper over the brass rail. His own facilities for getting newspapers are rather limited. He is a type — a man typical, if you please — of 400,000 of his fellows

who make the track safe for you. The brigadiers general of this sturdy corps of railroaders are the engineers of the maintenance of way. A very large road will boast several executives of this title, reporting in all probability to a chief engineer of maintenance. Reporting to these from each superintendent's division is a division engineer—probably some chap out of Tech who is getting his first view of railroading at extremely short range. He, in turn, will have his assistants; but he is probably placing his chief reliance on his track supervisors.

Now we are coming much closer to the man whom you see standing there beside your train. These track supervisors are the field-rangers of maintenance. Each is in charge of from ten to twelve sections, which probably will mean from eighty to one hundred miles of single-track—much less in the case of double- or three- or four-track railroads. The section has its own lieutenant—section foreman he is rated on the railroad's pay-roll; but in its lore he will ever be the section-boss, and boss of the section he must be indeed. If ever there was need of an autocrat in the railroad service, it is right here; and yet, as we shall presently see, even the section-boss must learn to temper his authority with finesse and with tact.

Here, then, is our man with the shovel. Suppose that, for this instant, the limited grinds to a stop, and you climb down to him and see the railroad as he sees it. Underneath him are four or six or eight workers—perhaps an assistant of some sort or other. Over him are the supervisors and above them those smart young

engineers who can figure out track with lines and pot-hooks, though the section-boss is never sure that his keen eye and unfailing intuition are not better than all those books which the college boys keep tucked under their arms.

The college boys, however, seem to have the sway with the big bosses down at headquarters and the section-boss knows, in his heart as well as in his mind, that he can go only a little distance ahead before he comes against a solid wall, the only doors of which are marked Technical Education. He can be a supervisor at from \$90 to \$125 a month and ride up and down the division at the rear door of a local train six days a week; the time has gone when he might advance to the proud title of roadmaster—a proud title whose emolument is not higher than that of the organized brotherhood man who pulls the throttle on the way-freight up the branch. And, as a matter of fact, there are only a few roads which nowadays cling even to the title of roadmaster.

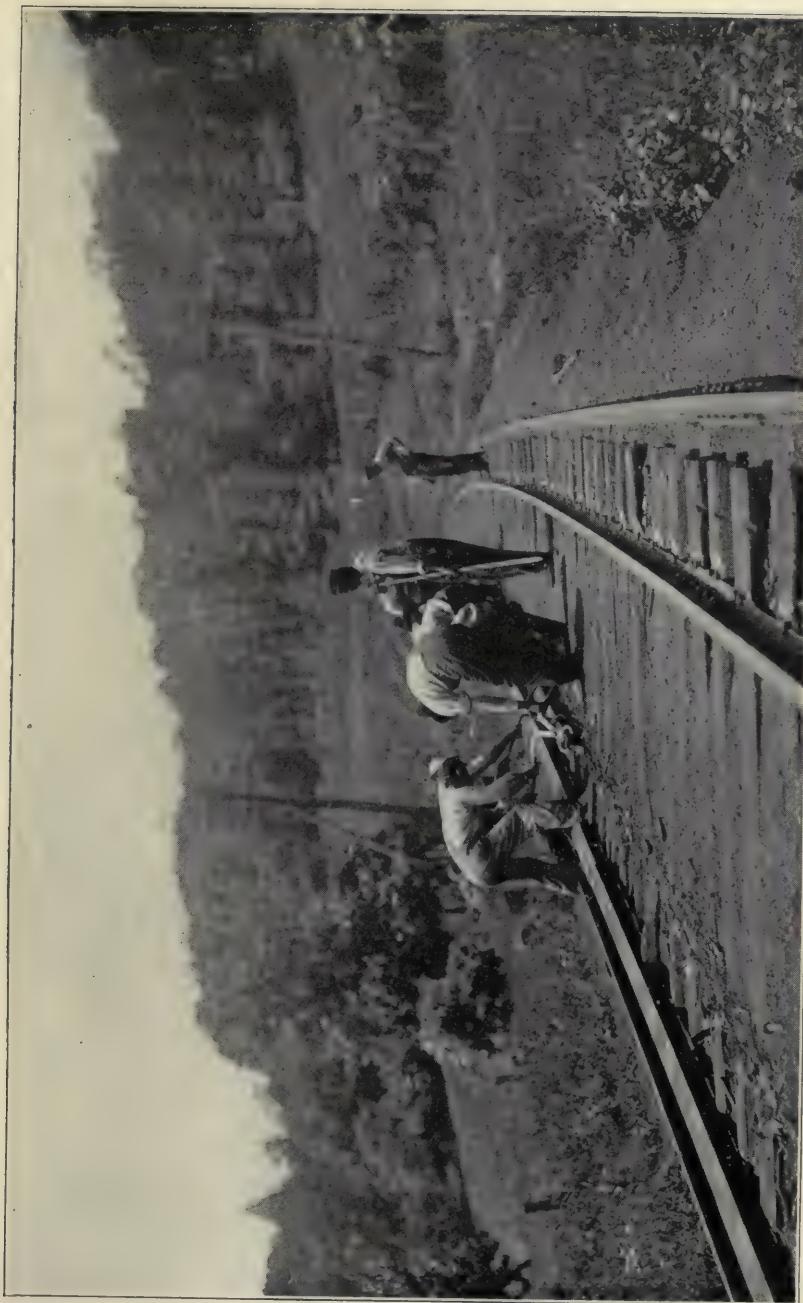
Yet this man is not discouraged. It is not his way. He will tell you so himself.

“Go up?” he asks. “Go up where?”

Let the limited go, without you. This man is worthy of your studied attention. Give it to him. You are standing with him beside a curving bit of single-track. The country is soft and restful and quiet, save for the chattering of the crickets and the distant call of your train which has gone a-roaring down the line. The August day is indolent—but the section gang is not. The temperature is close to ninety, but the gang

THE SECTION GANG

In the section-boss and his men is vested the responsibility of making the steel highway safe. A single broken rail may send the best driven locomotive into the ditch—a mass of tangled and useless scrap iron.



is tamping at the track with the enthusiasm of volunteer firemen at a blaze in a lumberyard. It is only its foreman who has deigned to give you a few minutes of his attention.

"Up where?" he asks once again—then answers his own question: "To some stuffy sort of office? Not by a long shot! I'm built for the road, for track work. This road needs me here. We're only single-track as yet on this division; but next summer we'll be getting eastbound and westbound, and then a bigger routing of the through stuff. Tonight the fastest through train in this state will come through here, at nearer seventy miles an hour than sixty, and my track's got to be in order—every foot of the 37,000 feet of it."

"That's your job," you say to him.

"Part of it," he replies. "My job is seven miles long and has more kinks to it than an eel's tail. See here!"

He points to a splice-bar, almost under your feet. You look at it. You are frank to admit that it looks just like any other splice-bar that you have ever seen; but the section-boss shows you a discoloration on it, hardly larger than a silver dollar.

"Salt water from a leaky refrigerator car did that. We've got to look out for it all the time—especially on the bridges."

You choke a desire to ask him how he knows and merely inquire:

"Are you responsible for the bridges too?"

"To the extent of seeing that they are O.K. for train movement. My job includes tracks, switches,

drains, crossings, switch and semaphore lamps. We get out on our old hand-power Mallet here and make every sort of emergency repair you can think of—and then some more—on telegraph wires, culverts, signals, and the interlocking. We've got to know the time card and keep out of the way of the regular trains. Every little while a special comes along and we have to dump our little Pullman in the ditch—without much time for ceremony. We've got to know as much about flagging as the trainmen. And sometimes we have to act as sextons."

"Sextons?" you venture.

He thumbs a little notebook.

"Last year I performed the last rites over seven cows, two sheep, and a horse. My job has a lot of dimensions."

He puts his book back in his pocket and draws out a circular letter which the general manager at headquarters has been sending out to all the track-bosses. He hands it to you, with a grin. It says:

More than any other class of employees you have the opportunity of close contact with the farmers who are producing today that which means tonnage and therefore revenue for the company tomorrow. Have you ever thought of cultivating the farmer as he is cultivating the fields? A friendly chat over the fence, a wave of the hand as you pass by, may mean a shipment of corn or cattle—just because you are interested in him. For your company's welfare as well as your own, cultivate the farmer.

The railroad can and does do a lot of efficient solicitation through its fixed employees in the field; the oppor-

tunities of the station agent in this wise are particularly large. And there is a good deal of real sense in this particular circular. Yet the section-boss seems to regard it as distinctly humorous.

"The big boss sits in his office or in his car," is his comment, "and I think he forgets sometimes that he was once a section man himself and working fourteen hours a day. The farmer doesn't have a lot of time for promiscuous conversation, nor do we. We'll wave the hand all right—but a chat over the fence? Along would come my supervisor and I might have a time of it explaining to him that I was trying to sell two tickets to California for the road. No, sir, we're not hanging very much over fences and chatting to farmers. Under the very best conditions we work about ten hours a day. And there are times when a sixteen-hour law, even if we had one, wouldn't be of much account to us."

"What times?"

"Accidents and storms! When we get a smash-up on this section or on one of my neighbors' we all turn to and help the wrecking crew. I've worked fifty-one hours with no more than a snatch of sleep and without getting out of my clothing—and that was both accident and storm. It's storm that counts the most. It's nice and pretty out here today, even if a little warmish. Come round here next February, when the wind begins to whistle and the mercury is trying to hide in the bottom of its little tube, and help me replace rails in a snow-packed track."

Against conditions such as these the railroad finds no little difficulty in securing good trackmen. The

section-boss will tell you how, until about twenty years ago, these were largely Irishmen, with a fair mixture of Germans and Scots—even a few Englishmen. The Italians began coming over in droves a little more than a quarter of a century ago and almost the first men they displaced were the Irish trackmen on our railroads. Perhaps it would be fairer to say they took the jobs which the Irishmen were beginning to scorn. The latter preferred to become contractors, politicians, lawyers. What is the use of driving like a slave all day long, they argued, when you can earn five times as much by using your wits?

Of recent years there have been few Irishmen in track service—an occasional section-boss like the man to whom we have just been talking—and with the exception of Wisconsin and Minnesota, practically none of the men from the north of Europe. Even the better grades of Italians have begun to turn from track work. They, too, make good contractors and politicians and lawyers. In the stead of these have come the men from the south of Italy, Greeks, Slavs, a few Poles, and a few Huns. These seem particularly to lack intelligence. Yet they seemingly are all that the railroad may draw upon for its track maintenance.

These were the conditions that prevailed up to the beginning of the Great War in Europe. Since that time the situation has grown steadily worse. With the tightening of the labor market, with the inadequate rates of pay in both the car and right of way maintenance departments of the railroads, the average railroad manager is hard pressed today to keep his line

in order. Sometimes he fails. And a distinct factor in the run-down condition of so many of our second- and third- and fourth-grade railroads is not alone their financial condition, to which we already have referred, but quite as much their utter inability to summon track labor at any price within their possibility. It is rather difficult, to say the least, to get a section foreman at three dollars a day when Henry Ford is paying five dollars as a minimum wage in his Detroit factory and munition manufacturers are even going ahead of this figure. I myself have seen grass growing this last summer in the tracks of some mighty good roads. And weeds between the ties and the rails are all too apt to be the indication of even worse conditions—not quite so perceptible to the eye.

It is this very polyglot nature of the men who work upon the track which has operated against their being brought into a brotherhood—such as those who man the freight and passenger trains. The isolation of the section-bosses and their gangs, as well as the dominance of the padrone system among the Italians until very recently, have been other factors against a stout union of the trackmen. But the mixture of tongues and races has been the chief objection. You do not find Italians or Slavs or Poles or Greeks on the throttle side of the locomotive cab or wearing the conductor's uniform in passenger service, although you will find them many times in the caboose of the freight and the Negro fireman is rather a knotty problem with the chief of that big brotherhood. In fact, it has been rather a steady

boast of the engineers and the conductors that their great organizations are composed of Americans. That fact, of itself, is peculiarly significant.

Yet what are Americans? And how many of those fine fellows who drive locomotives and who captain fancy trains will fail to find some part of their ancestry in Europe, within three or four generations at the longest? We have shown that responsibility is not a matter of color, of race, nor of language. And it is responsibility—responsibility plus energy and ability and honesty—that the railroad seeks to obtain when it goes into the market to purchase labor.

The day has come when the railroad has begun to take keener notice of the personnel of the men to whom is given the actual labor of keeping the track in order. The better roads offer prizes to the foremen for the best-kept sections. The prizes are substantial. They need to be. With hard work as the seeming reward in this branch of service the railroad, even before the coming of the war, was no longer able to pick and choose from hordes of applicants. A dozen years ago it began to fairly dragnet the labor markets of the largest cities; and when it gets men it has to use them with a degree of consideration that was not even dreamed of in other days.

No longer can an autocratic and brutal foreman stand and curse at his section hands. They simply will not stand for it. "Bawlers-out," as the worst of these fellows used to be known along the line, are not now in fashion. And the track supervisor who used to stand on the rear platform of a train and toss out "butter-

flies" is far more careful in his criticism. "Butterflies," be it known, are indited by the supervisor *en route* to call the attention of the foremen to track defects in their sections.

The Negro is still in large service in the South—below the Ohio and east of the Mississippi. He is a good trackman—and with the labor market as it stands today, drained to the bottom, it is a pity there are not more of him. Unlike most of the south-of-Europe men, he has strength and stamina for heavy, sustained work. Moreover, he is built to rhythm. If you can set his work to syncopated time he seems never to tire of it. He is a real artist. He cuts six or eight inches off the handle of his sledge hammer and it becomes his "short dog." Gripping it at the end with both hands he swings it completely around his head and strikes two blows to the white man's one, no matter how clever the white man may be. And he is actually fond of a bawler-out. He respects a real boss.

The hobo trackman is in a class by himself. He is not the migratory creature that you may imagine him. On the contrary, in nine cases out of ten he can be classed by distinct districts. Thus he may be known as a St. Paul man, a Chicago man, or a Kansas City man, and you may be quite sure that he will venture only a certain limited distance from his favorite haunts. In the spring, however, he generally is so hungry that he is quite willing to undertake any sort of job at any old price, provided free railroad tickets are given.

The majority of these hoboes have had experience

with the shovel. Some of them know more about track than their foremen. Unless the section-boss has had previous experience with hoboes, however, he will get no benefit from their superior knowledge, but will be left to work out his problem entirely alone.

As a rule the hobo becomes independently rich on the acquisition of ten dollars. Then he turns his face toward that town to which he gives his devoted allegiance. He now has money to pay fares; but he does not pay them. Summer is on the land and he likes to protract the joys of the road; so he beats his way slowly home and leaves a record of his migration executed in a chirography that is nothing less than marvelous. The day that masonry went out of fashion in railroad construction and concrete came in was a bonanza to him. On the flat concrete surfaces of bridge abutments and piers, telephone houses and retaining walls, he marks the record of his going and whither he is bound—and marks it so plainly with thick, black paint that even he who rides upon the fastest of the limited trains may read—although it may not be given to him to ever understand.

Down in the Southwest the track laborer is Mexican, while in the Far West he is a little brown man, with poetry in his soul and a vast amount of energy in his strong little arms. The Japanese invasion has been something of a godsend to the railroads beyond the Rocky Mountains. Up in British Columbia, where John Chinaman is not in legal disfavor, you will find him a track laborer—faithful and efficient. On the Canadian Pacific seventeen per cent of the total force

of trackmen is Chinese. At the west end of that Canadian transcontinental, the track gangs almost exclusively are Chinese.

The Jap is not illegal in the United States, however, and he is turning rapidly to railroading. It is only fair to say that he is the best track laborer our railroads have known. He is energetic, receptive, ambitious, intelligent, and therefore easily instructed. His mind being retentive, he rarely has to be told a thing a second time. Though small, he is robust and possessed of powers of endurance far beyond any other race. Furthermore, he is cleanly—bathing and changing his clothes several times a week. His camp is always sanitary and he prides himself on the thoroughness of his work. You may be sure he is carrying a Japanese-English dictionary and that from it he is learning his three English words a day. Track workers from the south of Europe will spend a lifetime without ever learning a single word of English.

There is another class of Asiatic workers that in recent years has begun to show itself along the west coast and this class is far less satisfactory in every way. These are the Hindus. They have drifted across the Seven Seas and marched into a new land through the gates of San Francisco or Portland or Seattle. But as yet they have not come in sufficient numbers to represent a new problem in American railroading. The Japanese already have attained that distinction.

Here, then, is the polyglot material with which our section-boss must work. His name may be Smith, he may have come out of New England itself, and his little

house there beside the track is probably as neat as yours or mine. He works long hours and hard, with his body, his hands, and his mind; the men under his authority are more apt to be inefficient than efficient; his responsibility is unceasing. It is not an easy job. And for it he is paid from sixty-five to ninety dollars a month—rarely more. A locomotive engineer is paid three times as much. Yet he is protected by the eight-hour day as his standard of employment, although it is more than likely that his actual hours of work may be even less than eight. And his responsibility is little greater than that of the section-boss.

CHAPTER VI

UNORGANIZED LABOR—THE STATION AGENT

THE primary schools of railroading are the little red and yellow and gray buildings that one finds up and down the steel highways of the nation, dotting big lines and small. You find at least one in every American town that thinks itself worthy of the title. And they are hardly less to the towns themselves than the red schoolhouses of only a little greater traditional lore. To the railroad their importance can hardly be minimized. They are its tentacles—the high spots and the low where it touches its territory and its patrons.

To best understand how a station agent measures to his job, let us do as we have done heretofore and take one of them who is typical. Here is one man who in personality and environment is representative and the small New York State town in which he is the railroad's agent is typical of tens of thousands of others all the way from Maine to California. Brier Hill is an old-fashioned village of less than 10,000 population, albeit it is a county seat and the gateway to a prosperous and beautiful farming district. Two railroads reach it by their side lines, which means competition and the fact that the agent for each must be a considerable man and on the job about all of the time. Our man—

we will call him Blinks and his road the Great Midland — has never lived or worked in another town. Thirty years ago he entered the service of the G.M. as a general utility boy around the old brick depot at twelve dollars a month. The old brick depot is still in service and so is Blinks.

In thirty years his pay has been advanced. He now gets \$110 a month; in addition his commissions amount to \$40 or \$50 a month. Engineers and conductors get much more, but the station agent, as we have come to understand, is not protected by a powerful labor organization. There is an Order of Railroad Station Agents, to be sure, but it is weak and hardly to be compared with the Brotherhood of Locomotive Engineers or the Order of Railroad Trainmen. In some cases the station agents rising from a telegraph key have never relinquished their membership in the telegraphers' union. But, with the telephone almost accepted as a complete success in the dispatching of trains, the railroads see a new opportunity for the efficient use of men who have been crippled in the service; in some cases for the widows and the daughters of men who have died in the ranks. It takes aptitude, long months, and sometimes years to learn the rapid use of the telephone. A clear mind and quick wit are all that is necessary when the long-distance telephone moves the trains up and down the line.

Blinks, being typical, does not belong to a labor organization. Although he was an expert telegrapher with a high speed rate, he did not happen to belong to the telegraphers' organization. Instead there is in him a fine vein of old-fashioned loyalty to the property.

He was all but born in the service of the Great Midland; he expects to die in the harness there in his homely old-fashioned office in the brick depot at Brier Hill. His is the sort of loyalty whose value to the road can hardly be expressed in mere dollars and cents.

If you would like to know the truth of the matter, you would quickly come to know that the real reason why Blinks has never joined a union is that he holds an innate and unexpressed feeling that he is a captain in the railroad army, rather than a private in its ranks. For he is secretly proud of the "force" that reports to him—chief clerk, ticket agent, two clerks, a baggagemaster, and three freight-house men. Not a man of these draws less than seventy dollars a month, so there is not much difference in their social status and that of the boss. No one has been quicker than he to recognize such democracy. He prides himself that he is an easy captain.

"We work here together like a big family," he will tell you, "although I'm quite of the opinion that we're about the best little collection of teamwork here in the village. Together we make quite an aggregate. Only two concerns here employ more help—the paper mill and the collar factory."

You are a bit astonished at that—and at that you begin to think—not of the relation of the town to the railroad but rather of the railroad to the town. You ask Blinks as to the volume of the business his road does at his station. He hesitates in replying. That is rather a state secret. Finally he tells you—although still as a secret.

"We do a business of \$50,000 a month," he says quietly, "which is as much as any two industries here—and this time I'm making no exceptions of the paper mill or the collar factory."

Quickly he explains that this is no unusual figure. And figures do not always indicate. Smithville, up on another division, is only a third as large and does a business of \$20,000 a month. There are paper mills here and inasmuch as they handle their products in carload lots on their own sidings there is need of a large force around the station. On the other hand, a neighboring town of the same size shows about the same monthly revenue and needs a station force much larger than Blinks's. For its leading industry is a paint factory, without siding facilities. Its products move in comparatively small individual boxes, requiring individual care and handling—that is the answer.

"You work long hours and hard hours?" you may demand of Blinks.

He shakes his head slowly.

"Long hours a good deal of the time, but not very often hard hours," he tells you. "My work is complicated and diverse but it is largely a case of having it organized."

Indeed it is complicated and diverse. There are only four passenger trains each day up and down the line, but the rush of freight is heavy, particularly at certain seasons of the year. And both of these functions of the railroad as they relate to Blinks's town come under his watchful eye. In addition, remember that he is the express agent and is paid a commission both on the

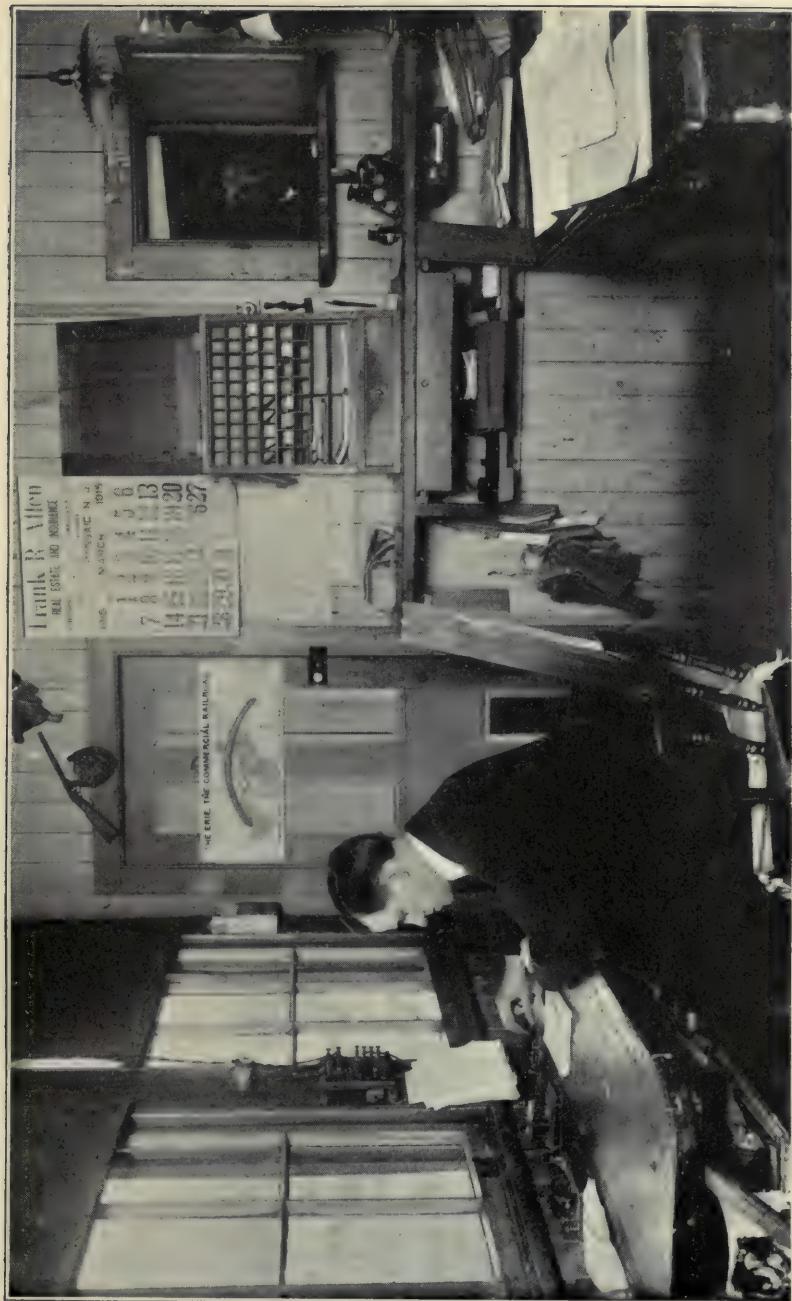
business bound in and on the business bound out of his office, as well as the representative of the telegraph company. The telegraph company pays him nothing for handling its messages, but from the express company he will probably average forty-five dollars a month, particularly as his brisk county-seat town is one in which the small-package traffic does not greatly vary at any season of the year. Down in the Southwest, where a great amount of foodstuffs moves out by express within a very few weeks there are men who may, in two months, take several hundred dollars, perhaps a check into four figures from the express company. The gateway to a summer resort is regarded as something of the same sort of a bonanza to the station agent. Still Blinks, if he would, could tell you of a man at a famous resort gateway who lost his job through it. The president of his road was a stickler for appearances. On a bright summer day when vacation traffic was running at flood tide, his car came rolling into the place. Word of it came to the station agent, but the station agent was lost in an avalanche of express way-bills. He should have been out on the platform in his pretty new cap and uniform. At least that was what the president thought. So nowadays that station agent gives all his time to the express way-bills. There is a new man for the cap and uniform, and when the president of that railroad arrives in the town he is greeted with sufficient formality.

As a matter of fact the express companies prefer to maintain offices wherever it is at all possible. The

bonanza offices for the railroad agents are few and far between and when the railroad begins to find them it is apt to part. So Blinks can consider himself lucky that his commissions do not run over fifty dollars a month. That means that the express company will not attempt anything as suicidal as establishing its own office in Brier Hill and his own modest perquisite is not apt to be interrupted.

His is routine work and intricate work. He writes enough letters in a week to do credit to a respectable correspondence school and he makes enough reports in seven days to run three businesses. His incoming mail arrives like a flood. There are tariffs, bulletins, more tariffs, instructions, more tariffs, suggestions—and still more tariffs. The tariffs, both freight and passenger, are fairly encyclopedic in dimensions and the folks down at headquarters fondly imagine that he has memorized them. At least that seems to be their assumption if Blinks can judge from their letters. Every department of the road requests information of him, and gets it. And when he is done with the railroad he realizes that he is violating biblical injunction and serving two masters, at least. For the express company is fairly prolific with its own tariffs and other literature. And the telegraph company has many things also to say to Blinks there in the old brick depot.

Yet the wonder of it is that Blinks endures it all—not only endures but actually thrives under it. In a single hour while you are sitting in his dingy, homy little office just back of the ticket cage, you can see



THE STATION AGENT
He is the human tentacle of the railroad; the flesh-and-blood factor by which it keeps in touch with many, many thousands of patrons.

the press of work upon him. He has just finished a four-page report to the legal department, explaining the likelihood of the road's being able to stave off that demand for an overhead crossing just back of the town; there is a letter on his desk from the general freight agent asking him for a "picture" of the business at Brier Hill, which means a careful analysis of its industries and trade—not an easy job of itself. There is an express package of \$25,000 in gold destined to a local bank, over in the corner of the ticket cage. Blinks keeps a bit of watchfulness for that "value package" down in the corner of his mind while a thousand things press in upon it. Number Four is almost within hearing when a young man and his wife appear at the window, baggage in hand, and demand a ticket via Cincinnati, St. Louis, and Sedalia to Muskogee. The young ticket clerk tears madly through a few dozen tariffs, scratches his head blankly—and Blinks has to jump into the breach. In thirty seconds he has the right tariff.

"I think the through one way is thirty-four sixteen," he smiles at the patrons, "but I had better look up and make sure."

His memory was right—but Blinks takes no chances.

"Can we get a stop-over at Urbana?" asks the woman.

The station agent dives into a tariff, after a moment nods "yes."

"Wonder if we could go around by Jefferson City and stop off there?" inquires the man, "I've relatives there."

Blinks starts to say "yes," then hesitates. Wasn't there a special bulletin issued by the Missouri Pacific covering that detour? or was it the Katy? He finds his way through twenty or thirty tariff supplements. He knows that if he makes a mistake he not only will be censured, but will probably be forced to make good the mistake from his own pocket—according to the ruling of the Interstate Commerce Law, which he feels is yet to be his nemesis.

Number Four is almost near enough to hear the hissing of her valves but he tells his patrons not to worry—she has a deal of express matter to handle this morning and will tarry two or three minutes at the station. He finds the right ticket forms, clips and pastes them, stamps and punches them, until he has two long green and yellow contracts each calling for the passage of a person from his town to Muskogee. Incidentally he finds time to sell a little sheaf of travelers' checks and an accident insurance policy in addition to promising to telegraph down to the junction to reserve Pullman space. In six or seven minutes he has completed an important passenger transaction, with rare accuracy. Rare accuracy, did we say? We were mistaken. That sort of accuracy is common among the station agents of America.

When the nervous, hurried, accurate transaction is done you might expect Blinks to rail against the judgment of travelers who wait until the last minute to buy tickets involving a trip over a group of railroads. But that is not the way of Blinks.

"I could have sent them down to the junction on a

local ticket and let them get their through tickets there. But I like those tickets on my receipt totals and I'm rather proud of the fact that they've made this a coupon station. My rival here on the R—— road has to send down to headquarters for blank tickets and a punch whenever he hears in advance of a party that's going to make a trip and a clerk down there figures out the rate. We make our own rates and folks know they can get through tickets at short notice."

That means business and Blinks knows that it means business.

"But he almost had me stumped on that alternative route via Jefferson City," he laughs. "They catch us up mighty quickly these days if we make mistakes of that sort."

The Interstate Commerce Law, as we have already seen, is a pretty rigid thing and lest a perfectly virtuous railroad should be accused of making purposeful "mistakes" in quoting the wrong rate, it insists that the agent himself shall pay the difference when he fails to charge the patron the fully established rate for either passenger or freight transportation. In fact it does more. It demands that the agent shall seek out the patron and make him pay the dollars and cents of the error, which is rather nice in theory but difficult in execution. The average citizen does not live in any great fear of the Interstate Commerce Law.

Blinks, being a practical sort of railroader, is willing to tell you of the line as it works today—of the problems and the perplexities that constantly con-

front him. And occasionally he gives thought to his rival, whose little depot is on the far side of the village.

"Now Fremont is up against it," he tells you confidentially. "His road is different from ours. We have built up a pretty good reputation for our service. My job is a man's job but at least I don't have to apologize for our road. Fremont does. His road is rotten and he knows it. He knows when he sells a man a ticket through to California or even down to New York that the train is going to be a poor one, made up of old equipment, probably late, and certainly overcrowded. And if it's a shipper Fremont knows that there is a good chance that his car is going to get caught in some one of their inadequate yards and perhaps be held a week on a back siding.

"It keeps Fremont guessing. His business is not more than half of mine and he has to work three times as hard to get it. He catches it from every corner and starves along on a bare eighty dollars a month. And they are not even decent enough to give him anything like this."

He delves into an inner pocket and pulls out a leather pass wallet. It is a "system annual"—a magic card which permits his wife or himself to travel over all the main lines and side lines of the big road, at their will. He gives it a genuine look of affection before he replaces it.

"When a man's been fifteen years in the station service of our road, he gets one of these for himself; at twenty-five they make it include his wife and de-

pendent members of his family—which is quite as far as the law allows."

Blinks laughs.

"They're generous—in almost every way—except in the pay envelope. And in these days they're actually beginning to show some understanding of the real difficulties of this job." There is an instance in his mind. He gives it to you. For the station agent here at Brier Hill still recalls the fearful lecture he got from the old superintendents of his division—within a month after he was made station agent at the little town. They had celebrated the centennial of the fine old town; there had been a gay night parade in which all the merchants of the village were represented. Some of them had sent elaborate floats into the line of march, but Blinks had been content to have his two boys march, carrying transparencies that did honor to the traffic facilities of the Great Midland. The transparencies had cost \$6.75 and Blinks had the temerity to send the bill for them on to headquarters. If he had stolen a train and given all his friends a free ride upon it he hardly could have caught worse censure.

But Blinks's road has begun to see a great light. It has begun to realize Blinks and his fellows are the tentacles by which it is in contact with its territory. As the traffic steadily grows heavier it has relieved him of the routine of telegraphic train orders by establishing a block tower up the line at the top of the hill, where regular operators make a sole business of the management of the trains and so widen the margin of safety upon that division. It has appointed supervis-

ing agents—men of long experience in depot work, men who are appointed to give help rather than criticism—who go up and down its lines giving Blinks and his fellows the benefits of practical suggestions.

It has done more than these things. Today it would not censure him for spending \$6.75 out of his cash drawers for giving it a representation on a local fête-day. It would urge him to spend a few more dollars and make a really good showing. It is giving him a little more help in the office and insisting that he mix more with the citizens of the town. It will perhaps pay his dues in the Chamber of Commerce and in one or two of the local clubs, providing the dues are not too high. For the road is still feeling its way.

We think that it is finding a path in the right direction. It has long maintained an expensive staff of traveling solicitors for both freight and passenger traffic—expensive not so much in the matter of salaries as in the constant flood of hotel and food bills. It has ignored Blinks and his fellows—long-established tentacles in the smaller towns—and their possibilities. Now it is turning toward them.

Out in the Middle West they are trying still another experiment. Several roads have begun letting their local agents pay small and obvious transit claims right out of their cash drawers, instead of putting them through the devious and time-taking routine of the claim departments. Under the new plan the agent first pays the claim—if it does not exceed twenty-five dollars, or thereabouts—and the claim department checks up the papers. There may be cases where the

road loses by such methods, but they are hardly to be compared with the friends it gains. An express company has adopted the plan, three or four railroads are giving it increasing use. The idea is bound to spread and grow. And not the least of its good effects will be the increased self-respect of the agents themselves. The trust that the road places in them gives them new trust in themselves.

Blinks has a little way of talking about courtesy—which in effect goes something after the same fashion. He generally gives the little talk when a new man comes upon his small staff.

“The best exercise for the human body,” he tells the man, “is the exercise of courtesy. For it reflects not only upon the man who is its recipient, but in unseen fashion upon the man who gives it.”

After all, railroading is not so much engineering, not so much discipline, not so much organization, not so much financing, as it is the understanding of men.

CHAPTER VII

THE LABOR PLIGHT OF THE RAILROAD

SOME eighteen per cent of the 2,000,000 railroad employees of the land, receiving a little over twenty-eight per cent of their total pay-roll, are affiliated with the four great brotherhoods—of the engineers, the firemen, the conductors, and the trainmen. In fairness it should be added that the reason why this eighteen per cent in numerical proportion, receives twenty-eight per cent in financial proportion, is that the eighteen per cent includes the larger proportion of the skilled labor of the steel highway. Offhand, one would hardly expect a track laborer to receive the same wages as Freeman, whose skill and sense of responsibility entitles him to run the limited.

Yet how about this section-boss, this man whom we have just interviewed as he stands beside his job, the man who enables Freeman's train to make her fast run from terminal to terminal in safety? Remember that in summer and in winter, in fair weather and in foul, this man must also measure to his job. He must know that his section—six or seven or eight or even ten miles—is, every inch of it, fit for the pounding of the locomotive at high speed. You do not have to preach eternal vigilance to him. It long since became part of his day's work. And to do that day's work he

must work long hours and hard—as you have already seen—must be denied the cheeriness and companionship of men of his kind. He frequently must locate his family and himself far apart from the rest of the world. All of this, and please remember that his average pay is about one-third of the average pay of the engineer. It is plain to see that no powerful brotherhood protects him.

If space permitted we could consider the car-maintainer. His is an equally responsible job. Yet he, too, is unorganized, submerged, underpaid. His plight is worse than that of the station agent—and we have just seen how Blinks of Brier Hill earns his pay. As a matter of fact Blinks is rather well paid. There are more men at country depots to be compared with Fremont—men who give the best of their energy and diplomacy and all-round ability only to realize that their pay envelope is an appreciably slimmer thing than those of the well-dressed trainmen who ride the passenger trains up and down the line. The trainman gets a hundred dollars a month already—and under the Adamson law he is promised more.

This, however, may prove one thing quite as much as another. It may not prove that the trainman is overpaid as much as it proves that the station agent is underpaid. Personally, I do not hesitate to incline to the latter theory. I have learned of many trainmasters and road foremen of engines who have far less in their pay envelopes at the end of the month than the men who are under their supervision and control. And there is not much theory about the

difficulty a road finds, under such conditions, to "promote" a man from the engineer's cab to the road foreman's or the trainmaster's office. In other days this was a natural step upward, in pay and in authority. Today there is no advance in pay and the men in the cab see only authority and responsibility and worry in such a job—with no wage increase to justify it.

Down in the Southwest this situation is true even of division superintendents—men of long training, real executive ability, and understanding who are actually paid less month by month than the well-protected engineers and conductors of their divisions. There is no brotherhood among station agents, none among the operating officers of the railroads of America. And yet for loyalty and ability, taken man for man, division for division, and road for road, there are no finer or more intelligent workers in all of industrial America. Still the fact remains that they are not well-paid workers.

When is a man well paid?

According to the public prints, Charlie Chaplin, that amusing young clown of the movies, receives from a quarter to half a million dollars a year—according to the ability of his most recent press agent. I happen to know that a certain missionary bishop down in Oklahoma receives as his compensation \$1,200 a year—although he never is quite certain of his salary. With due respect to the comedian of the screen-drama, does anyone imagine that his influence in the upbuilding of the new America is to be compared for a moment to

that of the shepherd of the feeble flocks down in the Southwest?

Your economist will tell you, and use excellent arguments in support of the telling, that the wage outgo of the land is fixed, in definite proportion to its wealth. Granting then that this is so—one thinks twice before he runs amuck of trained economists—is it still fair to infer that the track foreman or the car-maintainer or the station agent is amply paid? And is it equally fair to infer that the pay of these three classes of railroad employees, so typical of unorganized transportation labor, could be raised by lowering the pay of organized employees without leaving these organized employees actually underpaid? And what assurance has the average man, the man in the street, that any reduction in the pay of the engineers, the conductors, the firemen, and the trainmen—if such a miracle actually be brought to pass—would result in a corresponding increase in the pay of the other eighty-two per cent of the labor of the railroad?

These are questions that must be answered sooner or later. In the present situation it looks as if they would have to be answered sooner rather than later. With them come others: Assuming still that our economist with his belief that the wage outgo of the entire nation is correct, is it not possible that the railroad as an institution is not getting its fair proportion of the national total? I have just shown you how eighteen per cent of the railroad's employees receives twenty-eight per cent of their pay-roll. It would be equally interesting to know the percentage of national

wage which goes to all the employees of all the railroads.

I cannot but feel when I realize the great annual total of wages which are being paid in the automobile and the war-munitions industries, to make striking instances, that the railroads are by no means receiving their fair share of the national wage account. Even the salaries paid to railroad executives, with the possible exception of a comparatively small group of men at the very top of some of the largest properties, are not generous. There has been much misstatement about these salaries. Because of these misstatements it is unfortunate, to say the least, that the railroads have not followed a policy of publishing their entire payrolls—from the president down to office boy.

But the fact remains—a fact that may easily be verified by consulting the records of the Interstate Commerce Commission—that railroad salaries are not high, as compared with other lines of industry in America. That is one reason why the business has so few allurements to the educated young men—the coming engineers of America. They come trooping out of the high schools, the technical schools, the colleges, and the universities of our land and struggle to find their way into the electrical workshops, the mines, the steel-making industry, the automobile shops, the telephone, even to the new, scientific, highly developed forms of agriculture. Few of them find their way to the railroad.

This is one of the most alarming symptoms of the great sick man of American business—his apparent

utter inability to draw fresh, red blood to his veins.¹ A few of the roads—a very few indeed—have made distinct efforts to build up a personnel for future years by intelligent educational means. The Southern Pacific and the Union Pacific have made interesting studies and permanent efforts along these lines. But most of the railroads realize that it is the wage question—the long, hard road to a decent pay envelope in their service, as compared with the much shorter pathways in other lines of American industry—that is their chief obstacle in this phase of their railroad problem.

It has been suggested, and with wisdom, that the railroad should begin to make a more careful study and analysis of its entire labor situation than it has ever

¹ "The bitter fight now raging as to the content and enforcement of the Adamson Act should not make us lose sight of certain things which are more fundamental in railroading than either wages or hours. The transportation service of this country has been the best in the world, partly because it gave us a free field for able and ambitious men. Rising from the commonest sort of day labor, these executives command the respect and obedience of the rank and file, but sometimes forget to cooperate. That is the root cause of the present-day troubles. It is natural that a corporation president should stand for the interests of the company, but if the men are to be bound up heart and soul in loyalty to the work, then their interests are, and must be, part of the interests of the company. A railroad cannot be run exclusively by presidents, superintendents, and managers; there must be engineers and firemen of training and long experience. As a practical matter, this means that these occupations must hold many capable men during their entire working lives. In a country of free institutions this situation cannot be held down by autocratic rule. If the men have no say in the company, they will try to get one in the union. The great mistake of American railroad presidents during the last thirty years has been to force this growth of factionalism, to make it plain that the union was *the* means by which the men could get ahead. The railroad brotherhoods secured one concession after another in hours, wages,

before attempted. Today it is giving careful, scientific, detailed attention to every other phase of its great problems. One road today has twenty-seven scientific observers—well trained and schooled to their work—making a careful survey of its territory, with a view to developing its largest traffic possibilities. And some day a railroad is to begin making an audit of its labor—to discover for itself in exact fact and figures, the cost of living for a workman in Richmond or South Bend or Butte or San Bernardino. Upon that it will begin to plot its minimum wage-increase.

Suppose the railroad was to begin with this absolute cost of living as a foundation factor. It would quickly add to it the hazard of the particular form of

and operating rules, concessions which the nonunion men could not get. The limits of this method have about been reached. Cannot railroad executives save the future by definitely abandoning this policy of quarrel and drift, by making themselves the true leaders of all their men? We think they can. They have had too much of a caste point of view and have been too much absorbed in other things. It is time to change. The general alternatives have been well stated by Edward A. Filene, a leader of the new mercantile New England, in these words:

“If American employers are farsighted they will begin to put as much hard thinking into the problem of men as they have put into the problem of machinery, for, finally, that contentment of labor which is based upon a welfare that springs from justice and frank dealing is the only soil from which permanently prosperous business can spring.

“All of the initiative in solving the labor problem must not in the future come from the employees. If the employers of America do not solve the labor problems by business statesmanship, the employees of America will determine the outcome by force; and what labor cannot get in the future by the physical force of strikes, it may be able to get through the legal force of legislation and the income-taxing power.”

“If our railroad employers, among others, will learn and apply the wisdom expressed in this excerpt, all will yet be well.”—*Collier's Weekly*.

labor in which its employee was engaged expressed in dollars and cents—a factor easily figured out by any insurance actuary. To this again would be added a certain definite sum which might best be expressed, perhaps, as the employee's profit from his work; a sum which, in ordinary cases at least, would or should represent the railroad's steady contribution to his savings-bank account. To these three fundamental factors there would probably have to be added a fourth—the bonus which the railroad was compelled to offer in a competitive labor market for either a man or a type of men which it felt that it very much needed in its service. Only upon some such definite basis as this can a railroad's pay-roll ever be made scientific and economic—and therefore permanent.

An instant ago and I was speaking of bonuses. The very word had, until recently, a strange sound in railroad ears. The best section foreman on a line may receive a cash prize for his well-maintained stretch of track; I should like to hear of a station agent like Blinks who knows that his well-planned and persistent effort to build up the freight and passenger business at his station, is to be rewarded by a definite contribution from the pay-chest of the railroad which employs him. Up to very recently there apparently has not been a single railroad which has taken up this question of bonus payments for extra services given. To the abounding credit of the Atchison, Topeka, and Santa Fé Railway and its president, Edward Payson Ripley, let it be said that they have just agreed to pay the greater proportion of their employees receiving less than \$2,000 a year

a bonus of ten per cent of the year's salary for 1916—a payment amounting all told to \$2,750,000. The employees so benefited must have been employed by the Santa Fé for at least two years and they must not be what is called "contract labor." By that the railroad means chiefly the men of the four great brotherhoods whose services are protected by very exact and definite agreements or contracts. The men of the brotherhoods are hardly in a position to expect or to demand a bonus of any sort. And it also is worthy of record that practically every union man, big or little, has placed himself on record against bonus plans of every sort.

I hope that the example of the Santa Fé is to be followed by the other railroads of the country.¹ It is stimulating and encouraging; it shows that the big sick man of American business apparently is not beyond hope of recovery. For, in my own mind, the bonus system is, beyond a doubt, the eventual solution of the whole involved question of pay as it exists today

¹ Already it has been followed by several other railroad and express systems—conspicuous among these, the Southern Pacific, the Union Pacific, the Erie, Wells Fargo & Co. Express, and the American Express Company. The Union Pacific's plan, embracing an expenditure of approximately \$2,500,000 in bonus payments, differs from those of the other railroads, except the Erie, in that it does not make a distinction between the men who belong to the brotherhoods or other forms of union labor, and those who are not "contract labor." The Union Pacific's plan also embraces a scheme of group insurance, in the benefits of which its employes participate without cost to themselves. Insurance plans, of one sort or another, have recently become popular, and are being recognized as a logical outgrowth of the pension systems which have long since become part of the fiber and structure of the older and more conservative of our railroad and express companies.

and will continue to exist in the minds of both employer and employee. Our progressive and healthy forms of big industry of the United States have long since come to this bonus plan of paying their employees. The advances made by the steel companies and other forms of manufacturing enterprise, by great merchandising concerns, both wholesale and retail, and by many of the public utility companies, including certain traction systems, are fairly well known. It is a step that, when once taken, is never retraced. The bonus may be paid in various ways—in cash or in the opportunity to subscribe either at par or at a preferred figure, to the company's stock or bonds. But there is little variation as to the results. And the workmen who benefit directly by these bonus plans become and remain quite as enthusiastic over them as the men who employ them and whose benefit, of necessity, is indirect.

In this connection some studies made recently by Harrington Emerson, the distinguished efficiency engineer, are of particular interest. Mr. Emerson, while attached to the president's office of the Baltimore and Ohio Railroad, has had opportunity to study the railroad situation at close range and in a very practical way. He has placed his carefully developed theories in regard to the man in the shop and his wage into a study of the railroader and his pay-envelope. He has gone back into transportation history and found that at first employes were paid by the day. But long hours either on the road or waiting on passing sidings worked great hardships to them. As a more or less

direct consequence the men in train service formed unions and succeeded in establishing the peculiar combination of pay upon the mile and the hour basis—which has obtained ever since in general railroad practice. If a train or a locomotive man was called for duty, even if he never left the station, he received a full day's pay. This, in Mr. Emerson's opinion and in the opinion of a good many others who have studied the situation, was as it should be and the principle should have been adhered to. But to it was tacked the piece rate of the mile. If a train or locomotive man made one hundred miles it was considered a day's work, even if made in two hours. In this way the piece-rate principle became firmly established alongside of the hourly basis.

“What was the result on railroad operation and costs?” asks Mr. Emerson and then proceeds to answer his own question. He calls attention to the cars weighing 120,000 pounds and having axle-loads of 50,000 pounds that are being run upon our railroads today and expresses his belief that because in our established methods of railroad accounting, operating costs include train men's wages, but not interest on capital invested in locomotives, cars, trains and terminals; railroad managers, driven by the need to make a showing long since began to plan more revenue tons per train-mile in order to keep down or lessen train-crew wage-costs per ton-mile. This was very well as long as it led to better-filled cars and trains, but the plan quickly expanded into heavier locomotives and heavier cars which necessitated heavier rails, more ties,

tie-plates, stronger bridges, reduced grades, and a realignment until all that was gained in tonnage-mile costs was lost in increased obsolescence, unremunerative betterment, and other fixed charges. Even as good a railroader as Mr. Harriman was once led to regret that railroads were not built upon a six-foot gauge instead of the long-established one of four feet eight and one-half inches, because he felt that this would enable him still further to increase train load in proportion to train crew.

A good many railroaders have said that we have reached and long since passed the point of efficiency by increasing our standard of car and train sizes. Mr. Emerson is not new in that deduction. But he puts the case so clearly in regard to the confusing double basis in the pay of the trainmen—the vexed point that is before the Supreme Court of the United States as this book is being completed, because the Adamson so-called eight-hour day omitted the mileage factor, to the eternal annoyance of those same trainmen—that I cannot forbear quoting his exact words:

Piece rates to trainmen should be abolished. The work of trainmen should be classified. There should be short hours and correspondingly high pay for men working under great strain. There should be heavy penalties attached for overtime, although it does not follow that the man who puts in the overtime should receive the penalty. Society wants him to protest against overtime, because it may be both dangerous to the public and detrimental to the worker. The worker should not be bribed to encourage it.

It is evident that pay by the hour with penalties for overtime would encourage lighter and faster trains. Lighter and faster

trains would increase the roads' capacity as well as car and locomotive mileage. Capital expenses would drop. The savings made would be available to increase wages and to pay higher bills for material and to pay better dividends.

Beyond this there is little more to be said—at least pending the decision of the highest court in the land. But no matter how the Supreme Court may find in this vexatious matter, the fact remains that the union man in railroad employ will continue to be paid upon this complicated and unfit double method of reckoning—clumsy, totally inadequate (built up through the years by men who preferred compromise) and complicate an intelligent and definite solution of a real problem.

Some day, some railroader is going to solve the question; and, in my own humble opinion, a genuine solution, worked from the human as well as the purely economic angle is going to rank with the bonus and other indications of an advanced interest on the part of railroad executives in the men as a step toward a betterment of the relations between them.

In my opinion such steps as these that I have just outlined not only would go far toward solving the frequent "crises" that arise between the railroads and their employees, but would tend greatly to prevent the depreciation of the human equipment of the road. Remember that this labor problem is one which presses hard not only upon the body politic, but upon the whole human structure of our country. Its solution, as well

as the solution of the physical question, must be not only immediate, but economic and financial.

All this is bound to result soon in a very great increase in the railroad's pay-roll. It is an added cost that must be met before the railroad can come into its own once again. It is quickly obvious that the great pay-roll must be equalized, that in these days of steadily mounting cost of living, its unorganized labor—its trackmen, its carmen, its shopmen, its clerks, its station agents—must be given a fairer chance in the division of its wages. It needs to pay better salaries to its minor officers, and it is today handicapped for lack of these.

It is obvious also that it is going to be extremely difficult, to say the least, for the railroad to reduce the wages of its organized labor. Put this statement to the ones that have gone before and you can quickly see the need for very great increases in the railroad's pay-roll in the immediate future. It is going to be compelled to seek a larger share in that great portion of the nation's outgo that goes to pay for its labor of every sort. It can no longer postpone the pressing demands of its unorganized workers.

The failure to increase their portion of the pay-roll, with its consequent tendency toward the depreciation, if you please, of much of the human element in the operation of the railroad, may yet prove to be a problem, larger and more serious than the failure not alone to increase but to prevent the physical depreciation of the railroad.

This physical question—the financial plight of the

railroad, its great and growing depreciation account, the consequent deterioration of its lines, particularly its branch lines—we already have discussed. To that plight now add the labor plight. No wonder that the great man of American business lies sick upon his bed. Already we have learned that from a purely material point of view, the railroad is nine years back of 1917 instead of nine years ahead of this date. Its involved, delicate, unsettled labor problem shows that nine years is a small lapse indeed between the tardiness of its labor relations, together with the real understanding of its human problem, and the general understanding of labor and social conditions in other lines of American industry.

Yet it is not too late to mend. And just to show that this is possible, that it is worth while bringing the sick man of American business back to health again, just for the opportunities of development that stand before him, I am going to take your time to show you a few of the larger possibilities of the railroads of the United States.

CHAPTER VIII

THE OPPORTUNITY OF THE RAILROAD

IN the past decade the United States has progressed mightily. Have the railroads of the land made equal progress? The past decade of American progress will, in all probability, pale before the coming of the next—particularly if we are cool-headed and smart-headed enough to take critical reckoning of our weaknesses and to use such a reckoning as a stepping-stone toward supplementing our great inherent and potential strength. Will the railroad during the coming decade move forward to its opportunity? And what is the opportunity of the railroad?

These are pertinent questions. They come with added force upon a statement of the present plight of our overland carriers and before one comes to consider the measures of immediate relief that must be granted them. They must be considered too—briefly, but with a due appreciation of their importance. The railroaders of vision—and I have never believed that there was a really big railroader who lacked vision—today are thinking of them.

For a beginning take the possibility of the application of electricity as a motive power in the operation of the railroad. Our overland carriers have only be-

gun to sound the vast possibilities of this great agent of energy. To many of the roads, its present attainments both in Europe and in America are still, in large measure, a closed book. They have little realization of what was accomplished in suburban electrification in Paris or in Berlin well before the beginning of the war; hardly greater realization of the marvels wrought in the suburban zones of New York, Philadelphia, Portland, and San Francisco. And the tremendous accomplishment of the Chicago, Milwaukee, and St. Paul Railway in transforming nearly 500 miles of its main line over the crest of the Rocky Mountains is still so new and so dazzling as to have given railroad managers in other sections of the land little opportunity to consider its opportunities as applied to their own properties.

Within the past few years the folk of the East have seen several important terminals—terminals really vast in their proportions and their accommodations—developed in the great cities of the Atlantic seaboard. There have been important passenger stations erected in other parts of the land—the new Union Station in Kansas City, the Union Station at Minneapolis, and the North Western Terminal at Chicago coming first to mind among these. But the passenger terminal developments along the Atlantic seaboard have differed from those of the Middle West chiefly in the fact that into their planning and construction has been interwoven the use of electricity as a motive power for the trains which are to use them. Practically every

one of these is so designed as to make its operation by steam power impossible.

The ambitious good taste of many of our cities growing into a real metropolitanism has been gratified in this decade of our national progress by the erection of monumental passenger stations. These structures invariably are more than merely creditable—they are impressive, majestic, beautiful. Yet the big railroaders do not always see them in this light. They find themselves, by one means or another, compelled to gratify local civic pride by the expenditure of hundreds of thousands and even millions of dollars more than it would cost to build a plain, efficient terminal, large enough to accommodate the traffic of both today and tomorrow. The extra expenditure goes to produce a granite palace, generally ornate and sometimes extravagant to the last degree.

Yet in all this widespread development of the American terminal, one at least has been evolved which is not merely monumental, but an economic solution of its own great cost. I refer to the new Grand Central Terminal in the city of New York.

You may recall the old Grand Central Station. It was no mean terminal. Commodore Vanderbilt built it himself soon after the close of the Civil War. The passenger business of the railroads of the land was then beginning to be a considerable thing. Americans were gaining the travel habit. The genus commuter had been born. The first of the railroad Vanderbilts saw all these things. And, because he had the fine gift of vision, he turned his far-seeing toward action.

On Forty-second Street—then a struggling crossroad at the back of New York—he erected the greatest railroad terminal in the world. It was indeed a giant structure, and the biggest of our American towns had, in its Grand Central depot, a toy over which it might brag for many and many a day.

New York was in genuine ecstasy about it. Its ornate and graceful train shed spanned thirteen tracks, and even if our fathers did wonder where all the cars could come from to fill so spacious an apartment they had to marvel at its beauty. And beyond this creation of the artist was the creation of the engineer—the huge switching yard, black and interlaced with steel tracks. It was a mightily congested railroad yard; upon its tight-set edges the growing city pressed. Skyscrapers sprang up roundabout and looked down upon the cars and locomotives. The value of that land, given as a switching yard for a passenger terminal, eventually was reckoned close to \$100,000,000. And the yard itself became a black barrier to the development of the heart of metropolitan New York.

In forty years from the day it was opened, the last vestige of the Grand Central depot, a building which, to a considerable portion of the population of this land, had been second in fame only to the Capitol at Washington, was gone. Workmen had torn it stone from stone and brick from brick and carted it off as waste to scrap yards. The majesty of that lovely vaulted train shed had been reduced to a pile of rusty and useless iron. It had been outgrown and discarded.

In fact within a dozen years after its christening the wonderful depot was overtaxed. Even Vanderbilt's vision could not grasp the growth that was coming, not only to New York, but to the great territory his railroads served. In a dozen years workmen were clearing a broad space to the east of the main structure for an annex train shed of a half-dozen tracks, to relieve the pressure upon the original station. Another twelve years and the laborers were again upon the Grand Central, this time adding stories to the original structure and trying to simplify its operation by new baggage and waiting rooms. Within the third dozen years the workmen were busy with air drill and steam shovel digging the great hole in the rock that was the first notice to the old Grand Central that its short lease of busy life was ending. And in the fortieth year of its life they were tearing down the old station—old within the span of two generations—old only because it had been outgrown.

The problem of the new Grand Central was both engineering and architectural. It is the engineering side of the problem which interests us here and now. It was that side which it was necessary to solve first. To solve it meant that the passenger traffic into New York from the north and east for another fifty or a hundred years must be discounted—not an easy matter when in the case of a single famous trunk-line railroad it has been found that the passenger traffic has doubled each ten years for the past three decades. When the statisticians put down their pencils the engi-

neers whistled. To fashion a station for the traffic of 1960, even for that of 1935, meant such a passenger station as no railroad head, no engineer, no architect had ever before dreamed of building. At a low estimate, it meant that there would have to be some forty or fifty stub-tracks in the train shed. In the great train shed of the Union Station of St. Louis, there are thirty-two of these stub-tracks and the span of that shed is 606 feet. That would have meant in the case of the new Grand Central a train house with a width of nearly a thousand feet. The engineers shook their heads. They knew their limitations—with the Grand Central hedged in by the most expensive real estate in the city of New York. To buy any large quantity of adjoining land for the new station was quite out of the question.

Fortunately there was a way out. There generally is. The electric locomotive had begun to come into its own. For the operation of this station, including the congested four-track tunnel under Park Avenue, from the very throat of the train-shed yard up to Harlem, four miles distant, it represented an almost ideal form of traction, largely because of its cleanliness and freedom from smoke. For the engineers who were giving their wits to the planning of a new terminal it was the solution of their hardest problem.

They would cut their train shed of fifty tracks about in half—and then place one of these halves directly above the other. This would make a fairly logical division between the through and the suburban traffic of the terminal. In that way the new Grand Central

was planned. And that one thing represented its first important demarkation from the other great passenger stations of the land. It also is the thing that pointed the way to the most wonderful development of America's most wonderful terminal, the thing that is infinitely greater than the station itself.

Recall once again, if you will, that dirty smoke-filled yard at the portals of the old station. It was rather an impressive place; by night, with its flashing signals of red and green and yellow, its glare of dominant headlights and the constant unspoken orders of swinging lamps; by day, a seeming chaos of locomotives and of cars, turning this way or that, slipping into the dark cool train shed under grinding brakes, or else starting from that giant cavern with gathering speed, to roll halfway across the continent before the final halt. To the layman it was fascinating, because he knew that the chaos was really ordered, on a scientific and tremendous scale, that the alert little man who stood at the levers of the inconspicuous tower mid-yard, was the clear-minded human who was directing the working of a great terminal by the working of his brain. But to the thinking railroader that railroad yard, like every railroad yard in the heart of the great city, was a waste that was hardly less than criminal.

The coming of the electric locomotive has spelled the way by which that waste in the hearts of our American cities may be ended. Concretely, in the case of the new Grand Central, it made a splendid solution of one of the greatest of the growth problems in the largest city of our continent. For, while the new

Grand Central, service and approach yards considered even as a single level—some sixty acres all told—are larger than the older yard, they apparently have disappeared. In that thing alone a great obstacle to the constant uptown growth of New York has been removed. Sixteen precious city blocks have been given back to the city for its development. And already a group of buildings possessing rare architectural unity and beauty have begun to rise upon this tract.

There are other American cities where this experiment—no longer an experiment, if you please—might well be effected today. Of these, more in a moment. For, before we leave the question of the Grand Central consider one other thing: the economic value of its design to the railroad company which has erected it. It was only a moment ago that we were speaking of the utter extravagance shown in the designing and building of the monumental passenger stations in so many of our metropolitan cities. The New York Central, for reasons of its own, has been reticent in stating both the cost of the new Grand Central and the income which it derives not only from the rentals of the privileges in the station itself—restaurants, news stands, barber shops, checking stands, and the like—but also from the ground rental of the great group of huge buildings which it has permitted to spring up over its electrified station yards. It is known, however, that this income is not only sufficient to pay the interest upon the investment of the new terminal, to provide slowly but surely a sinking fund for the retirement of the bonds which have been issued for the building of the

terminal, but also to go a considerable distance toward the actual operating expenses of the terminal.

Here, then, is the first of our giant opportunities for the railroader of tomorrow. There is, of course, no novelty in rentals from ordinary station privileges. The Pennsylvania Railroad, by the development of the electric locomotive, was enabled to tunnel both the Hudson and the East rivers and thus to realize its dream of long years—a terminal situated in the heart of Manhattan Island; a passenger terminal so situated as to place the great railroad of the red cars in a real competitive position with the railroad of the Vanderbilts, which so long had held exclusive terminal facilities within the congested island of Manhattan. The Pennsylvania did not do the thing by halves—it rarely does; it built what is beyond the shadow of a doubt the most beautiful railroad station in America, if not in the entire world. The majesty of its waiting room is such as to make it perhaps the loveliest apartment in all these United States.

But even the Pennsylvania lacked the opportunity for economic return that was gained out of the new Grand Central station, hardly a mile distant. That it was not asleep to the possibilities is shown by the double row of high-rental shops which line the arcade entrance to that waiting room. A central post-office, a clearing house for the great mail of New York, was erected spanning the maze of tracks at one end of the station. And recently the railroad has begun the erection of a huge hotel spanning the tracks at the other end. In this it is following the example of the New York Cen-

tral, which some time ago devised a group of hotels as a part of the development of the Grand Central property. One of these hotels is completed and immensely popular; the other has just been begun. The New York Central will not only derive a generous ground rent from these taverns—it places itself in a splendid strategic position to receive the traffic of their patrons. It is a somewhat singular thing—an instance perhaps, of the lack of vision of railroaders of an earlier generation—that modern hotels were not long ago made an integral part of our larger passenger terminals at least. Our English cousins have not overlooked this opportunity. The great hotels builded into their terminals have long since enjoyed a world-wide reputation for their excellence. Upon our own continent both the Canadian Pacific and the Grand Trunk railroads have not been slow to take advantage of similar opportunities. And to a considerable degree, at least, their example has been followed by certain roads right in the United States—the Santa Fé and the Delaware and Hudson are the first to come to my mind. The hotels of these railroads may not be, in themselves, directly profitable. But there is no question but that they are distinct factors in the development of passenger traffic, and so, in the long run, distinctly profitable.

Consider for an instant, if you will, the possibilities of the electrified passenger terminal as applied to some others of our metropolitan American cities. Take Boston, for instance. In that fine old town the electrifica-



THE P. R. R.'S ELECTRIC SUBURBAN ZONE

The block system operated automatically by electricity. The signal over the right hand track reads, "Stop." Picture taken near Bryn Mawr, Pa.



ELECTRICITY INTO ITS OWN

Electric suburban train on the main line of the Pennsylvania Railroad between Philadelphia and Paoli.

tion of its two great passenger terminals some time ago approached the dignity of becoming a real issue. Oddly enough the two railroads which would develop the situation in the larger of its two terminals—the South Station—are the New Haven and the New York Central, the lessee of the Boston and Albany. Though both of these systems participate in the joint operation of the new Grand Central Terminal of New York, neither of them has leaped at the possibility in Boston. The tremendous financial difficulties through which the New Haven property has been struggling for the last six or eight years and from which it has not yet emerged, are undoubtedly the cause of this. The Boston and Maine Railroad, which owns and operates the North Station, is in even worse financial plight. And it is hard for an outsider to see any immediate possibility of the application of electric power to the great North Station and the vast network of through and suburban lines which radiate from it. Nor is the North Station so situated as to render it possible today to give it an economic development even approximating that of the Grand Central.

The Boston and Albany is a co-tenant with the New Haven in the huge and murky South Station. It has always been a rich railroad. Twenty-five years ago it was building superb stone bridges and stations, structures of real architectural worth—a full quarter of a century it was in advance of almost every other railroad in America. In those days the Boston and Albany probably did not dream that the time would come when its chief asset would be the value of its right of way

across the newer and the finer portion of Boston. "The Albany Road," as the older Bostonians like to term the B. and A., has the extreme possibilities of cost for the electric transformation of its lines all the way from Worcester east, not only met but many times multiplied in the development possibilities of the Back Bay district which it now traverses with its through track and interrupts with its somewhat ungainly storage yards. These yards, now used for the holding of empty passengers coaches, occupy tremendously valuable acres on Boylston Street within a block of Copley Square—the artistic and literary center of the Hub. They are essential, perhaps, to the economical operation of the road's terminal, but when you come to consider the growth of the city, a tremendous waste. They have stood—a noisy, dirty, open space—stretching squarely across the path of Boston's finest possible development. If these were marshlands, like those that used to abound along the Charles River, Boston long ago would have filled them in and added many valuable building sites to its taxable area. For remember that the development of the Grand Central Terminal has proceeded far enough already to show that in these days of heavy steel and concrete construction, and with the absolute cleanliness of electric railroad operation, it is possible to build a hotel over a big railroad yard without one guest in a thousand ever knowing that a train is being handled underneath his feet every thirty seconds or thereabouts. Indeed, in the Grand Central scheme provision is being made already for the construction of an opera house right over the station approach tracks; the

congregation of St. Bartholomew's is building over the same railroad yards one of the finest church structures in America.

Here, then, is a golden opportunity for the Boston and Albany—by the substitution of electric power for steam and the roofing of its yards—to develop those tremendously valuable vacant acres back of Copley Square; and the man who goes to Boston ten years hence probably will not see a smoky gash cut diagonally through the heart of one of the handsomest cities in America in order to permit a busy railroad to deliver its passenger and freight at a convenient downtown point. It is hard to estimate the financial benefits which eventually will result to the Boston and Albany of cellarless city squares over its Boylston Street yards. The benefit to Boston, like the benefit to New York through the development of the Grand Central and Pennsylvania terminals, is hardly to be expressed in dollars and cents.

In Chicago the question of terminal electrification has taken a less definite form than in Boston, although the Chicagoans are making fearful outcry against the filth that is poured out over their city from thousands of soft-coal locomotives. The Illinois Central has been ranked as the chief offender because of its commanding location—blocking as it does the lovely lake front for so many miles. Chicago has ambitious plans for that lake front. You may see them, hanging upon the walls of her Art Institute. These plans, of necessity, embrace the transformation not only of the terminal

but of the railroad tracks within her heart from steam to electric operation.

Perhaps Chicago's plans are more definite than those of the railroads that serve her. It is significant that the great North Western Terminal, still very new, was builded with a slotted train-shed roof in order to release the smoke and foul gases from the many steam locomotives which are constantly using it. It is equally significant that the new Union Station, which is being built to accommodate four others of her largest railroads is also being equipped with a slotted train-shed roof, and for the same reason. On the other hand, it is gratifying to notice that the tentative plans for the new Illinois Central terminal contemplate the erection of a double-decked station, very similar in type to the new Grand Central—a station which, from the very nature of its design, must, of necessity, use electric traction. Doubly gratifying this is to Chicagoans: for as we have already said, the Illinois Central, which, through its occupation of the lake front by its maze of steam-operated tracks, has so long hampered the really artistic development of Chicago's greatest natural asset—the edge of its lovely lake. For some years past the Illinois Central has been particularly slow to make the best uses of its great suburban zone south of Chicago; slow to realize its even larger opportunities of a development even greater than that of today. This has come home with peculiar force to the many, many thousands of commuters who use its suburban trains each day. Now they know why the road has been so loath to retire its antique cars and locomotives in

this service. The filing of the primary plans for its new terminal on the lake front at Twelfth Street and Michigan Avenue shows that the road is at last planning to do the big thing in a really big way. And it is not fair to suppose that it has overlooked a single economic possibility of the electric development of its immensely valuable terminal. The result of this development upon the other railroads with their steam-operated terminals in the heart of Chicago, will be awaited with interest.¹

Philadelphia stands next to New York among eastern cities in the electric development of its terminals, although it is interesting to note here and now that for twenty years past the Baltimore and Ohio Railroad has handled both freight and passenger trains with electric power through its double terminal and long tunnel in the heart of that city and has handled them both economically and efficiently. The wonder only is

¹ The filing of further plans for the development of its main passenger terminal in Chicago would indicate decidedly that the Illinois Central had not overlooked the possibility of the electric development of its great suburban territory there. For the plans now not only include the new terminal, itself, but the complete electrification of the suburban service on the main line, as well as the South Chicago, Blue Island, Kensington and Eastern branches — all told, some forty miles of line — and involving for electric equipment alone the expenditure of about \$25,000,000. The railroad is to give up a large portion of the ground occupied by the existing station to permit of the widening and extension of the Lake Front Park, and its approaches. An interesting part of the whole terminal scheme is that which provides that the entire portion of the Illinois Central tracks between the present main passenger terminal at Twelfth street, which, in a general way, will become the site of the new one, and Randolph street — reaching the entire eastern edge of the Loop District — will become an elongated suburban station. From the

that its chief competitors should have retained steam power so long as a motive power in their long tunnels underneath Baltimore. Yet it is one of these competitors which is making the real progress in the Philadelphia situation. The Pennsylvania Railroad, which owns and operates Broad Street Station, probably one of the best-located passenger terminals in any of the very large cities of America, has already begun to use electricity to bring a large number of its suburban trains in and out of that station. After much patient experimentation it has evolved a comparatively inexpensive method of carrying the current to the overhead trolleys of these suburban trains. And the system has already proved itself so economical and so successful as to render its extension to other portions of the system a question of only a comparatively short time.

Electricity should spell opportunity to steam rail-

several platforms of this station subways will pass under Michigan avenue, and so enable commuters to avoid the heavy automobile traffic of that great thoroughfare.

The new terminal is to be planned large enough to accommodate eventually the many passenger trains of the several large railroads that now enter the LaSalle and Dearborn stations. If this is ever brought to pass the city of Chicago will have accomplished a real economic benefit. For the land occupied by these two great stations and their yards is not alone a considerable acreage, but the terminals themselves have acted as real barriers to the most logical growth of the so-called Loop District—the busy heart of commercial Chicago. Barred on the east by Lake Michigan, and on the north and west by the Chicago River, this commercial center would have grown south long ago had it not been for these two great terminals. Their removal, therefore, would not only accomplish a passenger traffic consolidation—of great advantage to the through traveler—but would open a great downtown area for the development of Chicago's heart.

roads. Yet until recently it seemingly has failed to do this very thing. It has looked as if the steam railroaders of a past generation were not thoroughly awakened to the opportunities it offered; were not willing, at any rate, to strive to find a way toward taking advantage of it. To understand this better let us go back for a moment and consider the one-time but short-lived rivalry between the trolley and the steam locomotive. As soon as the electric railroads—which were, for the most part, developments of the old-fashioned horse-car lines in city streets—began to reach out into the country from the sharp confines of the towns the smarter of the steam railroad men began to show interest in the new motive power. It would have been far better for some of them if they had taken a sharper interest at the beginning; if at that time they had begun to consider earnestly the practical adaptation of electricity to the service of the long-established steam railroad.

In many cases the short suburban railroads, just outside of the larger cities, which had been operated by small dummy locomotives, were the first to be electrified; in some of these cases they became extensions of city trolley lines. People no longer were obliged to come into town upon a poky little dummy train of uncertain schedule and decidedly uncertain habits and then transfer at the edge of the crowded portion of the city to horse cars. They could come flying from the outer country to the heart of the town in half an hour—and, as you know, the business of building and booming suburbs was born. After these suburban lines had

been developed the steam railroad men of some of the so-called standard lines, began to study the situation. As far back as 1895 the Nantasket branch of the present New Haven system was made into an electric line. A little steam road, which wandered off into the hills of Columbia County from Hudson, New York, and led a precarious existence, extended its rails a few miles and became the third-rail electric line from Hudson to Albany and a powerful competitor for passenger traffic with a large trunk-line railroad. The New Haven system found the electric third rail a good agent between Hartford and New Britain and the overhead trolley a good substitute for the locomotive on a small branch that ran for a few miles north from its main line at Stamford, Connecticut.

The problems of electric traction for regular railroads were complicated, however, and the big steam roads avoided them until they were forced upon their attention. The interurban roads spread their rails—rather too rapidly in many cases—making themselves frequently the opportunities for such precarious financing as once distinguished the history of steam roads, and also frequently making havoc with thickly settled branch lines and main stems of the steam railroads. In a good many cases the steam roads have had to dig deep into their pockets and buy at good stiff prices interurban roads—a situation that they might have anticipated with just a little forethought.

Such a condition was reached in a populous state along the Atlantic seaboard just a few years ago. A big steam road, plethoric in wealth and importance, had

a branch line about 100 miles in length, which tapped a dozen towns, each ranging from 10,000 to 30,000 in population. The branch line carried no through business, nor was its local freight traffic of importance, but it was able to operate profitably eleven local passenger trains in each direction daily. These trains were well filled, as a rule, and the branch returned at least its equitable share toward the dividend account of the entire property. As long as it did that no one at headquarters paid any particular attention to it.

There was no physical reason why that branch should not have been made into an interurban electric railroad a dozen years ago—the road that owned it has never found it difficult to sell bonds for the improvement of its property. Though no one paid particular attention to it at headquarters, a roving young engineer with a genius for making money, looked at it enviously—at the dozen prosperous towns it aimed to serve. A fortnight's visit to the locality convinced him. He went down to a big city where capital was just hungry to be invested profitably and organized an electric railroad to thread each of those towns. Before the headquarters of the steam road was really awake to the situation cars were running on its electric competitor. And the people of the dozen towns seemed to enjoy riding in the electric cars mightily—they were big and fast and clean. The steam road made a brave show of maintaining its service. It hauled long strings of empty coaches rather than surrender its pride; but such pride was almost as empty as the coaches.

Sooner or later any business organization must swal-

low false pride; and so it came to pass that an emissary of the steam road met the roving young engineer and asked him to put a price on his property. He smiled, totaled his construction and equipment costs, added a quarter of a million dollars to the total, and tossed the figures across the table. The emissary did not smile. He reported to his headquarters and the steam railroad began to fight—it was going to starve out the resources of its trolley competitor by cutting passenger rates to a cent a mile. When the trolley company met that, the railroad would cut the rate in two again—it could afford to pay people to ride on its cars rather than suffer defeat; but they would not ride on its cars, even at a lower rate. And once again the steam road's emissary went up the branch. He sought out the trolley engineer. The trolley man was indifferent.

“Well,” said the steam-road man, “we’re seeing you.” And at that he threw down a certified check for the exact amount that had been agreed upon at their previous conference.

The trolley man did not touch the paper. He smiled what lady novelists are sometimes pleased to call an inscrutable smile, then shook his head slowly.

“What!” gasped the emissary from the steam road. “Wasn’t that your figure?”

“It was—but isn’t now!” said the engineer. “It’s up a quarter of a million now.”

“Why?”

“Just to teach you folks politeness and a little common decency,” was the reply. And the lesson must have taken hold—for the steam railroad paid the

price. The result was that it again held the territory and could regulate the transportation tolls, but what a price had been paid! Two railroads occupied the territory that was a good living for but one. The trolley line, now that it has begun to depreciate and to require constant maintenance repairs, vies with the desolate branch of the steam road, which runs but two half-filled passenger trains a day upon its rails. A tax is laid upon the steam-road property—a greater tax upon the residents of the valley—for operating man after operating man is going to "skin" the service in a desperate attempt to make an extravagant excess of facilities pay its way. The trolley line has already raised many of its five-cent fares to an inconvenient six cents—the steam branch is held fast by the provisions of its charter and the watchfulness of a state regulating commission.

And in the beginning the entire situation could have been solved easily and efficiently by the comparatively modest expenditures required to electrify the steam railroad's branch.

A good many railroads have taken forethought. The New York Central found some of its profitable lines in western New York undergoing just such electric interurban competition and a few years ago it installed the electric third rail on its West Shore property from Utica to Syracuse, forty-four miles.

The West Shore is one of the great tragedies in American railroading. Built in the early eighties from Weehawken, opposite the city of New York, to Buffalo, it had apparently no greater object than to

parallel closely the New York Central and to attempt to take away from the older road some of the fine business it had held for many years. After a bitter rate war the New York Central, with all the resources and the abilities of the Vanderbilts behind it, won decisively and bought its new rival for a song; but a property so closely paralleling its own tracks has been practically useless to it all the way from Albany to Buffalo, save as a relief line for the overflow of through freight.

So the West Shore tracks, adapted for high-class, high-speed through electric service from Utica to Syracuse, represented a happy thought. Under steam conditions only two passenger trains were run over that somewhat moribund property in each direction daily, while the two trains of sleeping cars passing over the tracks at night were of practically no use to the residents of those two cities. Under electric conditions there is a fast limited service of third-rail cars or trains leaving each terminal hourly, making but a few stops and the run of over forty-four miles in an hour and twenty minutes. There is also high-speed local service and the line has become immensely popular. By laying stretches of third and fourth tracks at various points the movement of the New York Central's overflow through freight has not been seriously incommoded. The electric passenger service is not operated by the New York Central but by the Oneida Railways Company, in which the controlling interests of the steam road have large blocks of stock.

Similarly the Erie Railroad disposed of a decaying branch of its system, running from North Tonawanda

to Lockport, to the Buffalo street-railroad system, though reserving for itself the freight traffic in and out of Lockport. The Buffalo road installed the overhead trolley system and now operates an efficient and profitable trolley service upon that branch. Perhaps it was because the Erie saw the application of these ideas and decided that it was better to take its own profits from electric passenger service than to rent again its branches to outside companies—and perhaps because it also foresaw the coming electrification of its network of suburban lines in the metropolitan district around New York and wished to test electric traction to its own satisfaction—but ten years ago it changed the suburban service lines from the south up into Rochester from steam to electric. More recently it has tried a third method—by organizing an entirely separate trolley company to build an overhead trolley road paralleling its main line from Waverly, New York, to Corning, New York. In some stretches this new trolley road is built on the right of way of the Erie's main line.

The Erie people have preferred to conduct their electrification experiments in outlying lines of comparatively slight traffic rather than to commit themselves to a great electrification problem in their congested territory round New York and make some blunder that could be rectified only at a cost of many millions of dollars. That seems good sense, and the Pennsylvania followed the same plan. While its great new station in New York was still a matter of engineer's blueprints, it began practical experiments with electric traction in the flat southern portion of New Jersey. It owned a

section of line ideally situated in every respect for such experiments—its original and rather indirect route from Camden to Atlantic City, which had since been more or less superseded by a shorter “air-line” route. The third rail was installed and the new line became at once popular for suburban traffic in and out of Philadelphia and for the great press of local traffic between Philadelphia and Atlantic City. Of the success of that move on the part of the Pennsylvania there has never been the slightest question. Regular trains have been operated for several years over this route at a high rate of speed, and not the slightest difficulty has been found in maintaining the schedules.

In the Far West the Southern Pacific has made notable progress in the application of electricity as a motive power for branch-line traffic. Practically all of its many suburban lines in and around Portland and Oakland (just across the bay from San Francisco) are today being operated in this way—which enables modern steel passenger trains of two or three coaches to be operated at very frequent intervals, thus providing a branch-line service practically impossible to obtain in any other way. When, in the next chapter, we come to consider the automobile as a factor in railroad transportation, we shall consider this entire question of branch-line operation in far greater detail. I always have considered it one of the great neglected opportunities of the average American railroad. But to take advantage of it means a more intense study of its details and its problems. Our railroads, as you know already, have been woefully under officered. It is chiefly because

of this serious defect in their organization that the branch lines, their problems and their possibilities, have so long been neglected.

One thing more before we are entirely away from this entire question of the electric operation of the standard railroad: The use of this silent, all-powerful motive force is by no means to be confined to suburban or to branch lines. The New Haven management is steadily engaged in lengthening and extending its New York suburban zone. In the beginning, while it still was in a decidedly experimental state, this zone extended only from the Grand Central Terminal to Stamford, Connecticut—some thirty-four miles all told. Now it has been extended and completed through to New Haven, practically twice the original distance. In a little while it is probable that the New Haven will have completed another link in this great electric chain which slowly but surely it is weaving for itself. And there are traffic experts in New England who do not hesitate to express their belief that in another ten years, perhaps in half that time, all through traffic between New York and Boston—235 miles—will move behind electric locomotives.

There is nothing particularly visionary in this. Last year I rode a longer distance than that on a standard express train—the Olympian, one of the finest trains upon the North American continent, which means, of course, in the whole world. And the electrification of the main line of the Chicago, Milwaukee, and St. Paul Railway, whose boast it is that it owns and operates the

Olympian, was then but half complete. To be even more exact, only one-half of the first unit of installation, from Harlowton, Montana, to Avery, Idaho, had been installed. Workmen were still busy west of Deer Lodge, rigging, stretching the wires, finishing the substations and making the busy line ready for electric locomotives all the way through to Avery. And it was announced that when Avery was reached and the first contract-section completed—440 miles, about equal to the distance between New York and Buffalo—work would be started on another great link to the west; this one to reach the heart of Spokane itself. And in a little longer time electric locomotives would be hauling the yellow trains of the Milwaukee right down to tidewater at Seattle—a span of trollified line equaling roughly about one-half the entire run from Chicago to Puget Sound.¹

¹ Definite announcement has been made by the Milwaukee that it will begin the extension of its electric-equipped main line through the Cascades to Puget Sound early in the summer of 1917. This will mean that for a time there will be a "gap" for about 400 miles in the vicinity of Spokane, where steam will continue to be used as a motive power. For a number of miles west of Spokane the Milwaukee's main passenger line has trackage rights over the Oregon-Washington system. This fact, and the fact that electrification is best justified economically in mountainous districts is responsible for this "gap." It is probable that it will not continue to exist for many years more.

At the present time the very high cost of electric locomotives suitable for hauling heavy freight and passenger trains for long distances is making the Milwaukee—today the unquestioned leader in this great progressive policy of electrification—move both slowly and surely. According to the last annual report of the road the most recent lot of twenty engines cost an average of \$114,396.30 each—or about four or five times the cost of the largest steam locomotive. Despite the tremendous initial expense of these electric engines, their remarkable performances more than justify their cost.



THE OLYMPIAN

The crack train of the Chicago, Milwaukee & St. Paul Railway, drawn by an Electric Motor.



ORE TRAINS HAULED BY ELECTRICITY

Where the Chicago, Milwaukee, & St. Paul and the Butte, Anaconda, & Pacific Railways cross near Butte, Montana.

Now here is an undertaking—the harnessing of the mountain streams of Montana and Idaho and Washington toward the pulling of the freight and the passenger traffic of the newest and best constructed of our trans-continentals for half their run. Translated into the comfort of the passenger, it means that for a long night and two days that are all too short, the trail of the Olympian is dustless, smokeless, odorless; it means that the abrupt stops and jerking starts of even the best of passenger engineers are entirely eliminated. The electric locomotive starts and stops imperceptibly. It is one of the very strongest points in its favor.

And when you come to freight traffic—the earning backbone of the greater part of our railroad mileage in the United States—the operating advantages of the electric locomotive over its older brother of the steam persuasion are but multiplied. The electric locomotives of the Milwaukee, being the newest and the largest yet constructed, have missed none of these advantages. As the greatest of all these, take the single tremendous question of regenerative braking.

Up to this time no one has ever thought of transforming the gravity pull of a heavy train going downgrade into motive energy for another train coming uphill. Talk about visions! How is this for one? Yet this is the very thing that the Milwaukee is doing today—upon each of its heavily laden trains as they cross and recross the backbone of the continent. Its great new locomotives take all the power they need for the steady pull as they climb the long hills; but when

they descend those selfsame hills they return the greater part of that power—sixty-eight per cent, if you insist upon the exact figure.

Perhaps you drive an automobile. If so you probably have learned to come down the steeper hills by use of compression—by a reversal of the energies of your motor, until it is actually working against the compelling force of gravity. Your brakes are held only for emergency. That is the only part which the brakes on a Milwaukee electric train play today. The electric locomotive in a large sense is its own brake. In other words, a turn of the engineer's hand transforms its great motors into dynamos; gravity pulls the trains and forces the dynamos to turn—back goes the sixty-eight per cent of current into the copper trolley-wire overhead; over on the other side of the mountain somewhere a train ascending toward the summit feels instantly the influx of new energy and quickens its speed.

Here is the railroading of tomorrow thrusting itself into the very door of today. You certainly cannot accuse the management of the Milwaukee of any lack of vision. And perhaps it is only the highest form of tribute to it to mention the fact that the Great Northern, the strongest of the competitors in the Northwest, has been watching with keen interest the tremendous operating economies that electricity has brought to the road of the yellow cars and has already announced its intention of transforming at once its main line between Seattle and Spokane—200 miles—from a steam into an electrically operated line. The Great Northern, as

everyone should know by this time, is the first and the largest of the great group of Hill roads. And no one has ever accused James J. Hill, or the men who followed after him, of any lack of real transportation vision.

CHAPTER IX

THE IRON HORSE AND THE GAS BUGGY

THE other day the convention of an important Episcopalian diocese was held in a large town in one of our eastern states. The general passenger agent of a certain good-sized railroad which radiates from that town in every direction saw a newspaper clipping in relation to the convention and promptly dictated a letter to his assistant there asking about how many passengers they had had as a result of the gathering. The reply was prompt.

"None," it read.

The G.P.A. reached for his ready-packed grip and took the next train up there. He wanted to find out the trouble. It was not hard to locate. It was a pretty poor shepherd of a pretty poor flock who did not possess some lamb who commanded a touring car of some sort. And it was a part of the lamb's duty, nay, his privilege, to drive the rector to the convention. They came from all that end of the state in automobiles. And what had in past years been a source of decent revenue to the railroad which covered that state ceased to be any revenue whatsoever.

This is only one of many such cases. Any county or state or interstate gathering held in a part of the country where road conditions are even ordinarily good

may count on folk coming to it by automobile up to a 150-mile radius, oftentimes from much greater distances. It is not argued that the trip is less expensive; the contrary is probably invariably true. Only today folks have the cars, and a meeting in an adjoining county gives a welcome excuse for a little trip. Need more be said?

Only this. Those same folk might otherwise have gone upon the cars. And the railroad's assistant general passenger agent could have sat down beside his typewriter and written a neat little letter to his chief calling attention to the increased business resulting from the meeting of the Grand Lodge of the X.Y.G.C. this year as compared with that of last—the inference being nearly as clear to the chief as to the man who had created the aforesaid increased business. Multiply these lodge meetings, these conventions, these convocations; add to them high-school excursions and picnics and fraternity field-days almost without number; picture to yourself, if you will, the highways leading to these high spots of American life crowded with private and public motor cars of all descriptions and you can begin to realize a serious situation which confronts the passenger traffic men of the big steam railroads. Upon the eastern and western edges of the land, where highway conditions have attained their highest development, the situation is all but critical; in the central and southern portions of the country it is already serious.

Here is one of the big hard-coal roads up in the northeastern corner of the U.S.A. Its president lays much stress upon the value to the property of its an-

thracite holdings and carryings. Yet he is far too good a railroader to ignore the value of its passenger traffic. Because of this last his road has builded huge hotels and connecting steamboats. In past years its passenger revenues have even rivaled the tremendous earnings of its coal business. Because, however, of the competition of the automobile these have slipped backward for the past few years. And the president of the road has reasoned it out in an ingenious fashion.

"There are 4,339 motor cars licensed in Albany, Troy, and their intermediate towns alone," he says. "If each of these carried three passengers twenty-five miles a day for a year their passenger-miles would equal those of our entire system for the same time."

A passenger-mile, as we know already, is one of the units in estimating the traffic revenue of a railroad. It is passenger-miles, by the hundreds and the thousands, that the railroads of New England are losing today. When one stands beside one of the well-traveled pathways of the Ideal Tour, the Real Tour, or the Mohawk Trail and sees touring cars loaded to the gunwales with luggage go whizzing by him, ten, twenty to the hour, he begins to realize this.¹ More than 50,000 visiting automobiles were registered in Massachusetts this last

¹ To a very prominent hotel in the White Mountains five years ago, ninety per cent of the patrons came by train; last year ninety-five per cent of the guests arrived in their motor cars.

"Talk about getting folks to go to California, or even to the Rocky Mountains," said the veteran passenger traffic manager of one of the greatest of our transcontinental carriers, when he was in Boston a few weeks ago and heard of this, "we can and will advertise, but we are up against two tremendous competitors: The first of these is New York City, which is a tremendous permanent and perpetual attraction

summer. There were last year in the United States, 2,445,664 automobiles. With a carrying capacity averaging five persons to a car—12,000,000 persons all told—they can seat three times as many persons as all our railroad cars in the country combined. Not all of these folk would travel by train if there were no motor cars. Some of them are riding for the pure joy of automobile touring. But many of them would go to the mountains or the coast anyway and so make a large addition to railroad passenger revenues. The vast increase in trunks handled over reasonably long distances by the express companies in these last few years is, in itself, something of an index of the volume of this through business, which is today traveling by motor.

Now cross the country and take a quick glimpse at the situation in the Northwest. The president of an important steam road at Portland—which in turn controls both city and interurban lines extending out from Portland and Spokane—is peculiarly qualified to speak of the situation there.

“Our road has suffered severely from this new form of automobile competition,” he says. “We lost last summer quite a proportion of our passenger business moving from Portland to the beaches because of the

to all the rest of America 365 days out of the year. The second is the automobile, the family car, if you please, into which has gone the recreation money which otherwise might have been going into the ticket wickets of our railroads. Think of it, there were 900,000 pleasure cars built and sold in the United States last year, while the experts are placing 1,250,000 as the figure for 1917! More than \$1,500,000,000—an almost incredible sum—was spent by Americans last year on automobiles, and all the things which directly pertain to them. What chance has the railroad against such a giant of a competitor?”

completion of a hard-surface wagon road between it and them. We were compelled to withdraw several local trains, to lay off a number of trainmen because of this new competitor. With us the question is vital. It is still more vital with our electric interurban properties. Throughout California, Oregon, and Washington this class of railroad has suffered most severely from motor competition, and with the decreased cost and increased effectiveness of the automobile I expect such losses to increase rather than to diminish. In all these states there have been large expenditures for improved highroads during the past five years; many times under the guise of providing easy and inexpensive transportation for farm products to markets. But these highroads instead of being built from the transportation centers out into the producing region, so as to serve the farms, have almost invariably paralleled steam and electric lines. As a result the transportation companies have been heavily taxed to construct and maintain highways for the benefit of competitors who are carrying both passengers and freight in direct competition with them."

The Southern Pacific, whose lines cover California like a fine mesh, has been hard hit by this new form of competition. The fine new highways and the even climate of the Golden State, which brought the jitney to its highest strength there, are giving stimulus to its bigger brother—the long-distance motor bus. These have multiplied in every direction until today there are central stations in the larger cities, providing waiting, smoking, and reading rooms in charge of a joint em-

ployee, who usually acts as starter and information clerk and is liberally supplied with large printed schedules advertising automobile service to various points. From these stations the routes radiate in almost every direction; one may ride from San Francisco to Stockton, 80 miles; or to Fresno, 200 miles; connecting there with a public automobile for Los Angeles, some 250 miles farther. From Los Angeles there are still more routes: to Bakersfield, 124 miles over the new Tejon Pass route; to Santa Barbara, about 100 miles; to San Diego, about 125 miles, and from San Diego on to El Centro in the Imperial Valley, another 116 miles.

These routes are generally covered with touring cars — generally second-hand but tried and capable of efficient and reliable service. But there is a tendency toward larger cars, where the volume of travel warrants; several companies operating large busses, seating from twenty to twenty-five persons each. A very good example of this is the Peninsular Rapid Transit Company, which operates between San Francisco and San Mateo and between San Mateo and Palo Alto.

Fares by automobile in California are generally somewhat lower than the railroad fares. There are instances, however, where the fares are equal and yet the motor cars enjoy the bulk of the business, perhaps from their ability to pick up or discharge passengers anywhere along the route — in town or in country, perhaps from their frequency and flexibility of service. Several attempts made by the railroads to regain their traffic by reducing rates have shown these things to be real factors in the situation.

As far as the Southern Pacific is concerned, it finds today that the automobile has taken the bulk of its one-way and round-trip short-haul business, leaving it the long-haul and commutation traffic. In some instances the gasoline buggy has helped itself to long-haul traffic as well; as between Los Angeles and Bakersfield, where the distance by motor car over the wonderful new Tejon Pass highroad—to which the Southern Pacific, as chief taxpayer in California, has contributed most generously—is but 124 miles, against 170 miles, the shortest rail distance. The gasoline buggy can climb grades and round curves that the iron horse may not even attempt.

There is genuine feeling among many of the railroad companies of the land that the new competition is unjust. They make a good case for themselves. Complaints are coming in from the rail carriers all the way across the land. New York has appropriated and expended nearly \$100,000,000 in building a system of improved highways over the entire state. Like the highways of California, they, too, are superb roads. Not only do they link all the big cities and the big towns but they sometimes stretch for many miles through the fastnesses of the forest—you may drive for twenty miles through the Adirondacks on as perfect a bit of pavement as any city park may boast and yet not pass more than one or two human habitations in all that distance. All of which is glorious for the motorist and his friends, to say nothing of the hotel keepers and the garage owners on the route. But how about the New York Central Railroad, which covers

the greater part of New York State like a web and which, because of the fact that it is its chief taxpayer, becomes automatically the heaviest contributor to these highways? It knows that every mile of improved road that is completed is going to mean a lessening of its revenues from local passenger traffic. And it can have, from that point of view, small comfort from seeing the increasing list of motor-car owners in the New York State towns.

For the moment leave the purely pleasure uses of the motor car. Consider a commercial possibility that is increasing almost overnight. The auditing departments of concerns that have from 50 to 500 salesmen out in the field are beginning to acquaint themselves with gasoline and tire performances. They soon will have need of such special knowledge. A single case will illustrate:

Two drummers working out of Syracuse—the one for a typewriter concern and the other for a wholesale grocery—decided to cooperate. Together and out of their own funds they purchased an inexpensive car—had its body so adjusted that back of the driving seat there was a compartment large enough for a goodly quantity of samples and the valises that held their personal effects. They had figured that upon many of the local lines of railroad, operating but two or three trains a day in each direction at the most, they could not under the most favorable conditions "make" more than four towns a day. From twenty to thirty per cent of their time was spent in the lobbies of hotels or country stations waiting for the up local or the down.

With their automobile they now can get out of a town as soon as their business is done there. And during the past three months they have averaged six towns a day.

Here is a possibility of the automobile that the railroad can hardly afford to ignore. One big New England road noted in a recent month that its sale of mileage books—a form of railroad ticket designed particularly for the use of commercial travelers—had declined nearly twenty-nine per cent since the high-water mark three years before. Investigation on its part showed that the drummers all through its territory were beginning to get automobiles. The houses that employed them were encouraging them, either helping in the part purchase of the cars or, in some cases, buying them entirely. They, too, had discovered that their salesmen, no longer dependent on the infrequent train service of branch lines, could “make” more towns in a day.

Here is our ubiquitous branch line bobbing up once again. It is a problem which seemingly will not down. For branch-line passenger service is closely related to this last phase of automobile competition. It is the opinion of a good many shrewd railroaders—as well as our own—that the big roads have not always given proper attention to the full development of this phase of their traffic. Some of the big roads—some of the smaller ones too—have given this traffic, oftentimes valuable in itself and never to be ignored as feeding possibility of main-line and competitive traffic, little or no attention. Other roads ignore it.

"It is unprofitable," they tell you, with exceeding frankness. "If there is any money at all in the passenger end of the railroad it is in the long haul. We have our branch lines and of course we shall have to continue to operate them, as best we can. But they are the lean of our business. And we have to get a lot of fat on the long-haul traffic to even up with this discouraging lean."

It is because of this theory—very popular in some transportation circles—that so many branch-line railroads have today no more, in many instances even less, trains than they had twenty or thirty or forty years ago. The constant tendency has been to cut down service upon the branches. Such cuts generally come in the recurrent seasons of railroad retrenchment. But the trains cut off are rarely restored. For one thing, the branch-line railroad does not often run in a genuinely competitive territory. For another, there is apt to be less protest from a string of small towns and large villages than from one or two large cities with boards of trade, whose secretaries are eternally nagging the railroads.

Yet these small towns and villages—ofttimes the nucleus and the birthplace of our best Americanism—and even the isolated crossroads have some rights.¹ One of the largest of these is the right of communication.

¹ "The railroad that neglects its branch-line service is playing with fire vastly more than it may suppose," said a distinguished railroad economist only the other day. "It may feel that it has an economic right to neglect branch-line opportunities because of the limited revenue opportunities that these feeders oftentimes present. But it must not overlook one thing—the patent fact that many of the voters, the men

Some of them, under the shrinkage of the train service of the single branch-line railroad that has served them, have found themselves in turn shrinking and hardening. The popular-priced automobile may yet prove the salvation of these towns. The tavern at the crossroads has been repainted and is serving "chicken and waffle" dinners, the general store thrives anew on its sale of gasoline and oil. But best of all, the folks in adjoining villages visit back and forth. They mix and broaden. The intercourse that they were denied by the railroad has been given them through the agency of the automobile.

Come now to the public use of the automobile. And, although many railroaders profess to scout at the automobile carrying passengers for pay and state their belief that the increasing number of privately owned and operated cars represents their real problem, yet the motor bus operating 'cross country begins to bear, in its relation to the steam railroad, a strong resemblance to the effect of the jitney upon the traction road. In this last case the opposition quickly reached a high and dangerous volume and then subsided. The reasons why the jitney, after being hailed with high acclaim all the way across the land, has disappeared from the streets of more than half our American cities and towns, are not to be told here. It is sufficient here and

and women whose sentiment expressed in their ballots may build or ruin the future of so many of our overland carriers, reside upon these same branch lines. Indeed, one may say that the manufacture of sentiment upon branch-line railroads is a business well worth the attention of a keen traffic-man. For it may be just that very amount of sentiment that might swing the balance for or against a railroad."

now to say that, save in the South and the extreme West, it has ceased to be a formidable competitor of the trolley. But as the jitney of the city has diminished, its brother of the country roads has grown. And the various regulating boards, city and county, while generally looking upon the city boy with a forbidding look, have given nothing but encouraging glances to his country brother.

On a certain day last summer, I rode with Henry Sewall from Frederick, Maryland, to Baltimore. Henry is a coffee-colored Negro of unusually prepossessing dress and manner. He owns a seven-passenger motor car of 1916 model and a fairly popular-priced make. He keeps his car tuned up and clean.

I found the two of them in the main street of Frederick—just in front of one of the town's most popular hostelries. The car bore a placard stating that it would leave for Baltimore, forty-six miles distant, at five o'clock and that the one-way fare for the journey would be \$1.50. I asked Henry Sewall the time that I might reasonably expect to be at my hotel in Baltimore. He showed his even white teeth as he replied:

“Fore seven ‘clock, suh. Ah’ve been known to do it in less.”

I glanced at the time card of the railroad that connects Frederick with Baltimore. It is a particularly good railroad, yet the afternoon train that it runs over the “old main line,” as it calls that branch, left Frederick at 4:50 P.M. and did not arrive at a station, some ten “squares”—one never says “blocks” in Baltimore—from my hotel, until 7:30. Mileage and fare were

practically the same as Henry Sewall's, but the train made numerous intermediate stops. And Henry announced, with the Negro's love of pomp and regulation, that the laws of the state of Maryland would not permit him to stop and pick up passengers between Frederick and Baltimore—his license with the imposing state seal in its corner especially forbade that.

I rode with Henry. The softness and the sunshine of a perfect day in early summer, the knowledge that the old National Pike over which we were to travel was in the pink of condition, that we were to pass across the Stone Jug bridge and through the fascinating towns of Newmarket and Ellicott City was too much to be forsaken. And we had a glorious ride—the car filled and but one stop of ten minutes at the delightful Ellicott City, where Henry changed tires. But even with this detention I was at my hotel promptly at seven o'clock.

Henry makes the round trip from Baltimore to Frederick each day of the week, excepting Sundays, when his car is for general charter. Even on rainy days Henry's car is almost invariably filled—he manages to carry eight passengers besides himself. With a maximum earning capacity of twenty-four dollars a day and an average of only a very little less, Henry is earning a very good living for himself, even when he figures on the cost, the wear and tear, and the depreciation of an automobile which is being driven about 100 miles a day.

There are many Henry Sewalls in and around Baltimore. Maryland today claims to have the finest high-roads of any state in the Union. The cross-country

jitney busses have not been slow to take advantage of this. They start at regularly appointed hours from a popular-priced hotel in the heart of the city and the hours of their arrival and departure are as carefully advertised and as carefully followed as those of a steam railroad. When they are all starting out in the morning, the scene is as brisk and gay as it must have been at Barnum's Hotel in the Baltimore of nearly a century ago, when, with much ado and gay confusion, the coaches set out upon the post roads—for Frederick, for York, for Harrisburg, for Philadelphia, and for Washington.

Yet the railroads that radiate from Baltimore have not seen fit to fight these newcomers for the traffic of from ten to fifty miles outside the city. They have made particularly serious inroads upon the earnings of one of the smaller of these steam lines, which ordinarily derives a very good share of its earnings from its suburban traffic. There are good and sufficient reasons for the big railroads to hold their peace. Take Henry Sewall's opposition. The direct rail route to Frederick from Baltimore is a line exempted from through passenger trains and very largely given over to a vast tonnage of through freight. The officers of the road have from time to time given thought to the possibilities of increasing the local passenger service on that very line. To do so, however, on the generous plans that they had outlined among themselves would have meant either one of two things—either they would seriously have incommodeed the movement of the through freight—which is a railroad's largest source

of profit—or else they would have been compelled to add a third track to that particular line. The income from the increased local passenger service would not justify the expense in either of these cases. Therefore this railroad can afford to be indifferent to Henry Sewall and his gasoline coach.

Yet there is a broader way of looking at it. Out from my old home town in northern New York there radiates today nearly as complete a system of motor-bus routes as that from Baltimore. We have almost 300 miles of superb new state highways in Jefferson County. And Watertown—our county seat—is a hub of no small traffic wheel. These busses, despite the arduous winters of the North Country—Watertown is reputed to have but three seasons: winter and July and August—keep going nearly the entire year round. They are of course patronized all that time. And the railroad which serves almost the entire North Country loses much local passenger traffic as a result of them. It is the same system that I have just quoted as being the largest taxpayer in the state of New York—the chief contributor to its \$100,000,000 system of highways. Yet it, too, is not fighting these jitney busses. On the contrary, one of its high traffic officers said to me just the other day:

“We realize that the automobile is hardly apt to be a permanent competitive factor in any long distance passenger traffic—and that is the only passenger traffic in which we see any real profit. And there is a still bigger way of looking at it. Every automobile that goes into the sections of New York which we serve

means a movement of high-grade freight—the tires, the gasoline, the oils, the innumerable accessories that it constantly demands, mean more freight. Besides this, if the automobile is developing the man on the farm or in the little village we shall, in the long run, profit. The development of the entire state of New York means the development of our railroad."

And that is a platform on which no business—no matter how large or how small it is—can ever lose.

But is there not a possibility that the railroad can regain some of the traffic that it has lost, temporarily at least, to the motor car? Is it not possible that the derided branch line may not be changed from a withered arm into a growing one? Amputation has sometimes proved effective. There is many and many a branch-line railroad, which probably should never have been built in the first place, whose owners have been wise enough to abandon it and to pull up the rails. Old iron has a genuine market value. Go back with me once again to the time when the trolley began to be a long-distance affair. We have seen already how a good many steam railroad men looked with apprehension upon their branch lines—and with good cause.

For a time it did look as if the electric railroad might become a genuine competitor of the steam railroad. A good many interesting fantasies of that sort got into print. An enterprising interurban trolley company over in Illinois put on trolley-sleeping cars between St. Louis and Springfield and St. Louis and Peoria. It was said that the day was coming when a man would ride in a

trolley limited all the way from Chicago to New York—a real train, with sleeping cars and dining cars and Negro porters and manicures and an observation platform. The Utica (New York) Chamber of Commerce got tremendously excited over the matter and went all the way out to St. Louis and back in a chartered car taken right out of the press of traffic in Genesee Street.

But the trolley, as we have seen, has not proved a competitor of the steam railroad. It has become in almost every instance a feeder and as such is a valuable economic factor in the transportation situation. There have been no more sleeping cars placed on trolley routes, but a little time ago I found a Canadian Pacific box car on the shores of Keuka Lake, more than ten miles distant from the nearest steam railroad. A trolley road had placed it there, on a farmer's private siding. And he was packing it full of grapes—grapes to go overseas from some big Canadian port upon the Atlantic.

Such possibilities of the trolley line to the steam railroad point to similar feeding possibilities of the automobile—but of these very much more in their proper time and places. Let us still continue to study the possibilities of the branch line.

The other day I chanced to travel upon a certain small brisk railroad that runs across a middle western state. In my lap was a time card of that line and I was idly following it as we went upon our way. Half-way down the long column of town-names, I saw a change. In other days a passenger for the enterprising county shiretown of Caliph had been compelled to

alight at the small junction point known as East Caliph and there take a very small and very dirty little train for three miles, which finally left him at a clump of willows by a brookside—a full dozen hot and dusty blocks from the courthouse square which marks the geographical and commercial center of Caliph.

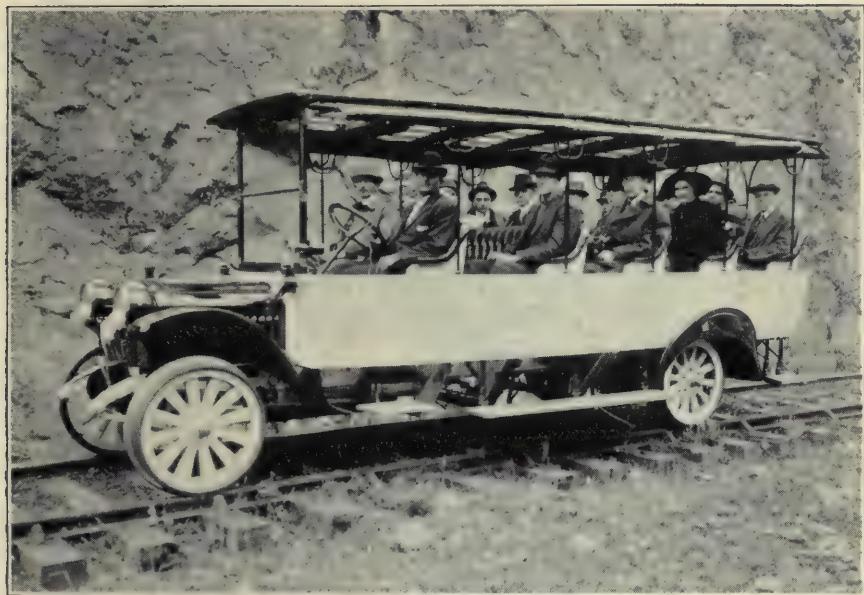
That branch-line train has disappeared. In its place a line on a time card reads "automobile service to Caliph," and at the junction I saw a seven-passenger touring car with the initials of the railroad upon its tonneau doors. The motor bus takes you to the door of Caliph's chief hotel, which faces that same court-house square. The branch is unused, except for occasional switching. There is no expense of keeping it up to the requirements of passenger traffic, nor of maintaining a passenger station. The hotel serves as this last and at far less expense. And the cost of running the automobile over three miles of excellent highway is far cheaper than that of running a railroad train. The chauffeur is an entirely competent conductor and ticket-taker. And between passenger runs he can be used to carry the express and baggage on a motor truck. His own opportunities for development are fairly generous.

Recently the automobile has been placed upon the railroad rails—with astonishing results as to both efficiency and economy. I saw one of these, not long ago, working on a small railroad running from the Columbia River up to the base of Mount Hood. The superintendent of that railroad—he likewise was its agent, con-

ductor, dispatcher, engineering expert, and chief traffic solicitor—had purchased a large “rubberneck” automobile, had substituted railroad flange wheels for the rubber-tired highway wheels, and was not only saving money for his property but also giving much pleasure to his patrons. A ride in a dirty, antiquated, second-hand coach behind a smoky, cindery locomotive is hardly to be compared with one in a clean, swift automobile, riding in the smooth ease of steel rails. So successful had the experiment proven that he was having a closed automobile made for winter service upon his railroad—with a tiny compartment for the baggage, the mail, and the express.

A series of interesting experiments conducted by the army along the Mexican border recently showed another way in which the motor truck could well be made an active ally and agent of the railroad. Special T-rail wheel flanges were designed to fit outside of the heavy rubber tires that carry the cars over highways. It is the work of a very few minutes to slip these steel flanges on or off the wheels. Which means that the motor truck may follow the lines of the railroad as far as it leads, giving many more miles of performance for each gallon of gasoline consumed; and then, when the rails end in the sand and sagebrush, may strike off for itself across the country in any direction.

These ideas may seem visionary—advanced, perhaps. They are nothing of the kind. They are new, but they do represent the practical working of the great opportunity in branch-line railroading. And the gasoline-propelled unit railroad coach is no longer vi-



THE MOTOR-CAR UPON THE STEEL HIGHWAY
How much better this than the smoky, dirty cars of yester-year!



THE ADAPTABLE MOTOR-TRACTOR
Equipped with flange wheels and hitched to a flat-car train on a logging railroad,
it makes a bully motor-truck of real hauling capacity.

sionary, no longer even to be classed as a mere novelty. This adaptation of the automobile idea in the form of a single gasoline-propelled car, which combines baggage and express and smoking and day-coach compartments in an efficient compactness, has been a tremendous help to many railroads on their branch-line problems. These cars require a crew of but three men against a minimum crew of five men on the old-style steam train for branch-line service. They are clean and they are fast. And they have aided many railroads to increase their branch-line operation without increasing their operating cost—in many cases making actual savings. It is well for the big men who own and operate the steam railroad to remember that no matter how rapid may be the spread of the automobile or how permanent its extensive use, there will always be a large class of travel-hungry folk who must ride upon some form of railroad. There are people who, if financially capable of owning a car, are incapable of running it, and cannot afford a chauffeur. And the difficulties of owning an automobile increase greatly when one comes to live in the larger cities. The local line situation is not nearly as bad as it looks at first glimpse. There is a business for it if the railroader will devote himself carefully to its cultivation. Remember that in many cases he has sought so long for the larger profits of long-distance business between the big cities that he has rather overlooked the smaller, sure profits of the local lines. And it is interesting to know that the railroad of the Middle West which concededly maintains the finest local service is the one road that made no active appearance in a

recent hearing in which the roads of its territory sought increased passenger rates. Despite the fact that many of its competitors have said that its local service is expensive and generous to an unwarranted degree, it found that its net profits on its passenger earnings were proportionately higher than those on its freight!

This road runs parlor cars upon almost all of its local trains, sleeping cars where there is even a possibility of their getting traffic. A big eastern road has just begun to follow this parlor-car practice. It builds and maintains its own cars. There are no expensive patent rights to be secured in the making of a parlor car. A double row of comfortable wicker or upholstered chairs, a carpet, lavatory facilities, and a good-humored porter will do the trick. And the train and the road upon which such a simple, cleanly car travels at once gains a new prestige. In an age when travel demands a private bath with every hotel room, a manicure with the haircut, and a taxicab to and from the station, a parlor car is more of a necessity than a luxury. And it is surprising to notice its earning possibilities upon even the simplest of branch lines or on one local train.

One thing more—a rather intimately related thing, if you please. We have spoken of the railroad automobile which runs up the public highway from East Caliph to Caliph and return. Let us consider that particular form of transportation service of the automobile in still another light. A man who went up into one of the great national parks on the very backbone of the United

States this last summer was tremendously impressed with both the beauty and the accessibility of the place. The one thing was supplemental to the other. This man was impressed by still another thing, however.

The railroad which had brought him to a certain fine and growing city at the base of the mountains—a most excellent and well-operated railroad it chanced to be—had a branch line which ran much closer to the national park, upon which it was spending many thousands of dollars in advertising, both generously and intelligently. In other days park visitors took this branch—four-in-hands or carriages from its terminal for the thirty-mile run up through the canyon and into the heart of the park. With the coming of the automobile all this was changed. The motor car quickly supplanted the old-time carriages, even the four-in-hands themselves. In a short time it was running from the big city below the base of the mountains and the railroad was taking off one of its two daily trains upon the branch in each direction. Then, after only a little longer time, it was making a truce with its new competitor—so that its through tickets might be used, in one direction at least, upon the motor cars.

An excellent idea, you say. Perhaps. But I know a better one.

This same man rode last summer upon one of those motor vehicles all the way from the big city up into the heart of the park—some seventy miles all told. He is a man who owns an excellent touring car at his home—back East. Perhaps that is the reason why he did not enjoy this run out in the West. For the car

on which he rode was a truck-chassis upon which had been builded a cross-seat body, with accommodations for some fifteen or sixteen passengers. It was the only practical way in which a motor vehicle could be built in order to compete with the railroad at its established rates of fare. Yet he did not enjoy the run, at least not until they were across the long forty-mile stretch of plains and up into the foothills of the Rockies. And then he and his were a little too tired by the slow, if steady, progress of the low-gearred truck-chassis, to really have the keenest enjoyment of the glorious park entrance.

The point of all this is that the railroad which owns and operates that branch line ought also to own those excellently managed motor routes that radiate from its terminals through one of the loveliest and most rapidly growing playgrounds in all western America—perhaps own and operate a chain of its own hotels as well. It would gain not only prestige by so doing, but traffic as well. For back of its own advertising of the charms of that superior place it would set the guaranty of its name, of its long-established reputation for handling passengers well.

There are plenty of places in the United States where this may be done—and done today. The Southern Pacific is widely advertising a motor route through the Apache country and the Salt River valley of Arizona and in connection with its southern main stem between El Paso and Los Angeles. The success of its radical traffic step on its part may yet lead it to a correlation with its service of many wonderful motor runs over

those superb roads of California, as well. Similar opportunities are open to the Burlington, the Milwaukee, the Union Pacific, the Denver and Rio Grande, the Great Northern—all of them railroads not ordinarily blind to traffic opportunities of any sort whatsoever.

In the East, the Boston and Maine, the Maine Central, and the Central Vermont railroads are confronted with dozens of such possibilities of developing through supplemental motor routes in the White Mountains and the Green Mountains; the Adirondacks, the Catskills, and the Alleghenies should be filled with opportunities for the Delaware and Hudson, the New York Central, the Pennsylvania, the Baltimore and Ohio, and the Chesapeake and Ohio railroads. To establish such routes only needs a few things—the detailed and detached attention of an alert young traffic man, with his nose well above conventions and precedents, working with a man schooled in the operation of motor vehicles upon a large scale. To this partnership add a competent advertising man, give a little money at the outset—and the trick will be turned. And I am confident that if it be well turned, the railroad will never wish to turn back again.

CHAPTER X

MORE RAILROAD OPPORTUNITY

LET us now bring the motor truck into consideration. So far we have not taken it into our plans. And yet it is the phase of automobile competition that some railroad men frankly confess puzzles them the most. For it hits close to the source of their largest revenue—the earnings from the freight. It is a transport of things rather than of men. But that is no fundamental reason why it should not become as much an ally and a feeder of the railroad—as the passenger automobile, for instance.

The possibilities of the motor truck, under the development of good roads, which already has gridironed the two coastal fronts of the United States with improved highways and placed them here and there and everywhere throughout the interior, are large. A wholesale meat vendor in Philadelphia has used motor trucks with specially designed refrigerator bodies to distribute his wares not only through the immediate suburban territory in southeastern Pennsylvania and in adjacent New Jersey, but right up to the very doors of New York City, itself. Florists, whose greenhouses dot the Illinois prairies for fifty miles roundabout Chicago, today are using fleets of these vehicles to bring their wares at top speed either to suburban railroad



WHEN FREIGHT
The past two winters have seen the great black-breasted yards of all our American railroads for days and weeks and months at a time trying to relieve the congestion. This is true of many, many others.



ON THE MOVE

is congested with traffic almost to the breaking point. Executives, high and low, have lived in
the terminal yard of the West Shore Railroad at Weehawken, N. J., opposite New York City, is typical

stations or down into the heart of the city itself—although this last is somewhat unsatisfactory owing to the crowded streets of downtown Chicago. The motor truck is coming into increasing use in Oregon and in Washington and in California. It is proving a disturbing competitor to the small railroads upon the larger islands of the Hawaiian group. And a company has just been formed to introduce a motor-truck freight service to certain railroadless parts of China—which are supplied with ancient but very passable high-roads.

Come back to the United States. Last winter, when the railroads of the East struggled under a perfect flood tide of freight, due to the rush of war munitions toward the seaboard for transshipment, they were compelled to issue embargoes. That means, plainly speaking, that for days and sometimes weeks at a time they were compelled to refuse to accept or deliver many classes of freight. They gave their first efforts to moving coal and milk and the other vital necessities for the towns which they served with the rigors of an unusually hard winter to combat. It was a long time before the embargoes were all raised—even with all the big operating men in the East working from eighteen to twenty hours out of twenty-four—in many cases living in their private cars set in the heart of the most congested yards.

Bridgeport was one of the towns that was hardest hit by these embargoes. While it is served by a single railroad, it is upon the main stem of that road—a system that is reputed to be well equipped for the

handling of high-grade freight. But the conditions were unusual, to say the least. Bridgeport found herself transformed almost overnight from a brisk and average Connecticut manufacturing town into one of the world's greatest munition centers. Prosperity hit her between the eyes. For a time people slept all night in the railroad station because they had nowhere else to go. And the fine new county almshouse was hurriedly transformed into a huge hotel. Bridgeport swarmed with people. A single munition factory there employed close to 20,000 people.

The railroad, long since hemmed in by the growing factory town, could not rebuild its yards overnight. Neither could it look for relief toward the other Connecticut towns. They, too, were making munitions and were in turn congested. But by far the worst congestion of all was at Bridgeport. The railroad people worked unceasingly, but for a time to apparently no purpose. And for a time it was almost impossible for a package to reach Bridgeport from New York or the West.

In this emergency the motor truck proved its worth. It so happens that there is a factory in Bridgeport which manufactures a very heavy type of motor truck. It put one of these in service between its plant and New York—fifty-six miles distant over the well-paved historic Boston Post Road. It brought emergency supplies of every sort to the factory doors. So efficient did it prove itself in everyday service that a group of Bridgeport manufacturers and merchants formed themselves into a transportation company and placed

other trucks in daily service between their town and New York. And a little later when the New York terminals became glutted with freight and hedged about with embargoes, the manufacturers of Bridgeport began having freight billed to them at the local freight houses in Newark. They extended their motor-truck service to that busy Jersey town and so saved themselves many dollars. When, in the course of a few months, the congestion was removed and freight conditions at Bridgeport were normal once again, the motor-truck service along the Post Road disappeared. It could not compete with the freight rates of the railroad.¹

¹ "Something more than a nation-wide railroad strike would have been required to interfere seriously with the business of the Norton Grinding Company, of Worcester, Mass., of the Halle Brothers Company, of Cleveland, the American Telephone and Telegraph Company, and some other far-sighted concerns," says a circular issued by the White Automobile Company at the time of the strike crisis in August, 1916. In meeting the threatened emergency of having all freight shipments blockaded, these companies outlined a new example in industrial preparedness.

"The Worcester machinery makers and the great Bell institution increased their fleets of trucks by having the machines delivered overland to avoid all chance of strike congestion, while the Cleveland department store planned its own transportation system between the Atlantic seaboard and the Sixth City.

"The situation confronting the Norton company was one which demanded immediate action, and in which normal methods were of no avail. When a general suspension of all the ordinary facilities for moving goods seemed imminent, the Norton company placed its order for three five-ton trucks with the Seymour Automobile Company, The White Company's Worcester dealer, and it was stipulated in the contract that the trucks should be delivered in Worcester within three days, independent of railroad service.

"The trucks were shipped by boat from Cleveland to Buffalo, and then driven overland to Worcester. The 500-mile journey was completed in the remarkably short time of forty-eight hours, with a gasoline

But its possibilities as a feeder are enormous. Only a few days ago I stood beside the desk of the traffic vice-president of a big trunk line and looked over his shoulder at a huge map spread there. It showed the main line and the branches of his railroad—from all these, stretching, like a fine moss upon an old oak, the improved highroads. The mapmaker had done more. By use of colors he had shown the automobile stage routes upon these roads—those that carried freight and those that combined two or three of these classes of traffic. The vice-president frankly confessed that he was studying to see what practical use he could make of these feeding motor routes.

It was significant that the railroad should be making so careful a study of its new competitor, that it should be taking the first beginning steps to recognize it not as a competitor but rather as a friend and an ally, a feeder which eventually may be the means of bringing much traffic to its cars. The motor truck running over a well-paved highway can easily reach a farm or factory situated far from the steel rails.¹ It may save

consumption of better than eleven miles to a gallon. Stops were made only for the purpose of replenishing the gasoline and oil supply, and for meals for the drivers."

¹ "The effect of the improvements wrought as the result of the self-propelled vehicle's influence is already strikingly apparent. When Franklin County, New York, voted \$500,000 in bonds to improve its system of roads, twenty-five cans of milk, weighing one hundred and twenty pounds each, constituted the average two-horse load. After the money raised by the bond issue had been spent, motor-trucks hauled fifty cans to the load. With the sum of \$28,000 the twelve-mile stretch of road leading from Spotsylvania Court House to Fredericksburg was improved. In a single year \$14,000 was saved in draying.

"The estimated cost of hauling the corn, wheat, oats, potatoes, cotton,

the construction of expensive and eventually unprofitable branch-line railroads just as the passenger automobile or motor bus has begun to save the building of unprofitable street-car lines. If the farm fails or the factory burns down, never to be rebuilt, the railroad does not find itself with an expensive and utterly useless branch line of track upon its hands.

There is still another great freight-traffic opportunity for the sick man of American business. It lies in the perfection and development of a standard unit container. The idea is not, in itself, entirely new. A good

and hay crops of the country is annually \$153,000,000. No one knows how much of that vast sum could be saved if motors were able to ply between the farm and the railroad station. Very few cities have compiled statistics. Some light is shed on the subject in a report prepared by the Chicago municipal markets—not so much on the influence of good roads as on the reduction in haulage costs, which is effected by self-propelled vehicles running on fine pavements. It appears that it costs eleven and one-quarter cents to carry one ton a mile by motor in the city of Chicago, and seventeen and three-quarter cents by horse. The average cost of delivering a package by the department stores, grocery stores, and meat markets of the city is approximately eight cents by motor and sixteen cents by horse for each mile.

“Apply these figures to the cities of the entire country, and consider further that motor-trucks can deliver goods directly from the farm to the city retailer, and it seems not unreasonable to expect that the cost of living must at least be held stationary, if it is not actually reduced by the wider introduction of mechanical road vehicles. Surely, the horse must eventually disappear in our towns, at least, if the city consumer pays an average of one dollar and ninety cents for vegetables which the farmer sells for one dollar; if it costs more to haul by horse one hundred pounds of produce five miles from Chicago wharves to the householder or the retail store than to ship it by boat from the shores of Lake Michigan to Chicago; if it costs nearly half as much to deliver a ton of coal by horse from the railroad tracks to the business district of Chicago as it does to ship it four hundred miles by rail from southern Illinois to the city.”—Waldemar Kaempffert in *Harper's Magazine*.

many men have been studying for a long time to develop a practical receptacle that will obviate the necessity of constantly handling and rehandling freight—always a great expense both at terminals and at transfer yards. The remarkable development of the automobile truck during the past five years has only emphasized the vital need of some such universal container.

An ideal receptacle of this sort would be built of fiber or of steel—better still, a combination of the two. Such a container would roughly approximate in size the body of a small motor truck. Two of them would fit comfortably upon the chassis of a large truck—three or four, upon the frame of an electric car—for either city or interurban use. The regulation freight car of the steam railroad would then consist of trucks and frame—builded to receive from five to seven of the standard containers. These containers would also be able to fit in the low hold decks of a steamship with a great economy of room and therefore with a great efficiency of service.

The manufacturer then would load the containers in his shipping room. Some of them destined through under seal to large cities, such as New York or Chicago or Philadelphia; others, carrying a variety of products to small places, would be addressed to recognized transfer or assorting points. This last method would be exactly similar to that employed by the post-office department or the express companies in handling their daily flood tides of small parcel traffic. The use of the universal container would be directed more particularly, however, to heavier freight, both in individual

packages and in bulk. Coal or grain or lumber would hardly be sent in a container. It might be possible, however, to ship flour and sugar in the universal container, and entirely without the expense of wrappings.

From the manufacturer's door—whether it were at street level, or in a community industrial building fifteen floors above the street—the container would go to the railroad frame car. By use of small-wheeled trucks or overhead tractors it would be carried first to the waiting chassis of the motor truck—in case the manufacturer was not able to command railroad siding facilities for himself. The motor truck would carry it to the freight terminal—overhead crane would make short shift of loading the container and its fellows upon the frame car.

The rest of the journey would be that of ordinary freight, save that at the destination the shipping process would be exactly reversed—the motor truck performing its part of the work again, if necessary, and the container going direct to the merchant or manufacturer with the least possible delay and with no expensive intermediate handlings, with their consequent labor expense as well as the possible danger from breakage.

This idea is not chimerical. Also, it is not inexpensive. It requires much study to work out the details and when these have been brought into practicability it would require much money for the initial investment in containers. They would have to be built in large quantities, in order to justify the large immediate expense to adapt any number of freight cars, terminals, and warehouses to their use. But as to their

efficiency and their ultimate economy, few transportation men who have given much real thought to the subject, are in doubt.

Such schemes quickly ally themselves with the entire problem of terminals.

“Terminals?” you say, and immediately think of what we were discussing a few minutes ago—the Grand Central station and other monumental structures of its sort. But those were passenger terminals. And now we have come to the great opportunities to be found in the handling and the development of the freight.

Perhaps you are not impressed with the importance of freight terminals. They are not the impressive gateways of large cities; but in many, many senses they are the most important. Through them pour the food-stuffs—the meats, the fish, the vegetables, the fruits, the milk, the clothing, the fuel, the thousand and one things, necessary for the comfort of man and his luxury. Bar those gateways but for a single day and then see the panic that would overcome your city.

While we were speaking of the new Grand Central station and the important step it typified in the economic and efficient progress of our country, we called attention to the allied facilities that were springing up round-about it—hotels, clubs, office buildings, auditorium, all of them more or less closely affiliated with the business of the great north gate of a metropolitan city. Is there any reason why the freight gateways should not be the housing places of affiliated industries—in-



THE BUSH TERMINAL
South Brooklyn, New York City.



NEW FREIGHT TERMINAL WAREHOUSE AT ROCHESTER
Built by the Buffalo, Rochester, & Pittsburgh Railway. A modern combination
of freight house and storage warehouse.

dustries, if you please, more or less dependent upon the rapid movement of either their raw material or their finished products? Suppose that the railroads were ever to seek out and solve that fascinating problem of the universal unit container. Would not the most fortunate manufacturer be he whose shipping room, his entire modern and concentrated factory as well, was so close to a comprehensive freight terminal as to permit the handling of his containers, his other freight too, by means of chutes or elevators—with even the motor truck, to say nothing of less modern forms of city truckage, entirely eliminated?

There is, on one of the harbor-shores of metropolitan New York, a city within a city. It is located in Brooklyn, to be exact, and it occupies somewhat more than a half-mile of waterfront—a waterfront cut into long deep-water piers, of the most modern type and running far out into the harbor. Back of these piers and connected with them by means of an intricate, but extremely well-planned system of industrial railroad, rise many buildings of steel and stone and concrete, almost all of them built to a single type and differing only in the minor details of their construction. On the many floors of this group of buildings are myriad separate industries, widely diverse as to character and product but all of them capable of concentrated location. Together they employ many thousands of men and women and the high-grade freight which they send out each day would pay a king's ransom.

In other days the greater number of these industries were scattered about both Brooklyn and the Manhattan

boroughs of New York. As a rule they were remote from both freight houses and sidings. The freight-terminal situation of New York, owing to the peculiar physical formation of the city and its segregation from the mainland by several great navigable rivers, the upper harbor, and the Sound, is most difficult of operation. All the railroads find it necessary to lighter their freight over these navigable streams, either upon car-floats or in other forms of vessels. And, even under the most favorable operating conditions of light freight traffic, there is constant danger of congestion.

But to a manufacturer situated on one of the narrow sidestreets of either Manhattan or Brooklyn, the situation was infinitely worse. His problem was to even reach the freight houses along the watersides of the town—a problem to be imperfectly solved by the use of trucks. Fifty trucks in a narrow street, crowding and jostling, mean infinite congestion and loss of time. Add to this the prima-donna-like temperament of the average truck-driver, showing itself in constant and protracted strikes, and you can see why the manufacturers have flocked not only to that great industrial city in South Brooklyn, but to others like it which have begun to spring up in and around metropolitan New York. Not only is the trucking expense entirely eliminated—the freight cars are waiting in the great community shipping rooms in the ground floor of the very factory—but heat and light and power are alike brought to a fixed and reasonable cost. And the newest of these manufacturing buildings are fabricated so strongly that it is both possible and practicable to raise

a loaded box car to any of their floors—to the manufacturer's individual shipping room, if you please.

Here is an idea instantly adaptable to the freight terminal of any railroad. A remarkably progressive small railroad—the Buffalo, Rochester, and Pittsburgh—has recently built a freight terminal of this very sort at Rochester. And there is hardly an important city reached by an important railroad that does not offer many opportunities for the development of freight terminals of this sort, terminals which, like the Grand Central station, would bring direct revenue to the railroad which built them. In this hour when the cost of foodstuffs is occupying so large a portion of public attention, when a large part of the problem lies in the marketing and storage facilities, or the lack of them, it might be possible to develop the freight terminal as both a cold-storage plant and a market. And all of this would tend to bring additional revenue to the railroad, as well as to simplify greatly, if not to solve entirely, some of the great transportation and terminal problems which are today troubling our cities and our larger towns and which are making their food costs mount rapidly to heights which the imagination has heretofore failed to grasp.

Already the residents of these communities are taking definite steps toward relief. In the city of New York, Commissioner John J. Dillon of the state Department of Food and Markets has proposed that the state erect a public wholesale market house for the private sale or auctions of foodstuffs of every sort and in every quantity. This market would be open, on equal

terms and without favor or prejudice to buyers of every sort. It is believed that it would, in every way, tend to simplify the terminal handling of foodstuffs and in just such measure help to reduce food costs to the ultimate consumer.

Commissioner Dillon estimates the cost of such a market house at from \$3,000,000 to \$4,000,000. Owing to a recent wave of stringent economy, upon certain lines, at Albany, this suggestion of his has not been looked upon with great favor by the executive branch of the state government. Yet it is probable that in the long run a state which has not turned a hair at a recently voted appropriation of \$10,000,000 for a necessary addition to its park lands will halt at a necessary appropriation of \$4,000,000 to reduce food costs in its largest city, even more to provide similar food stations in its other large communities. We soon shall see how it has voted \$150,000,000 for a canal of little or no practical value. The suggested expenditure for market houses is as nothing compared with that.

But before such market houses can be planned and erected comes the opportunity of the railroads whose lines reach New York. If they can build such terminals, or even adapt, temporarily at least, their present plants to meet such a public and general need they will be proving themselves, in truth, public servants.

If I may be permitted here and now to enter a *sotto-voce* remark, it would be that an absence of some such definite, modern, constructive methods as these—not alone in regard to food transportation, terminal handling, storage, and marketing, but as to speculation

itself—is going to bring the United States closer to a practical and nation-wide experiment in socialism than the disturbed railroad situation has ever brought it. It seems as if the Railroad's older brother, the steward and purveyor of our great estate, was about to fall ill. I think that I can see that tremulous, but stern nurse, Regulation, turning her attention toward him. And I am quite sure that if he does break down at this time he is going to know Regulation as the Railroad never has known her.

All these things are more or less intimately related to the question of terminals—more rather than less. And they are all most intimately related to the question of the freight-traffic development of the railroad.

"Get the terminals," were James J. Hill's repeated orders to his lieutenants in the creative period of his railroads. Hill knew the value of terminals, freight terminals in particular; he knew that it took a freight car bound from east to west or west to east as long to go through the city of Chicago as from Chicago to St. Paul—400 miles—and that is why he set out to get his terminals in growing cities while the land was cheap and the getting was good. Hill had vision. He was also tremendously practical. It was the combination of these qualities that made him the master railroader of his generation.

There is another form of transportation whose development always has been and always will be directly connected with the development of the railroads. I am referring to the use of the inland waterways of the

country—not merely the Great Lakes which today bear the most highly developed commerce of any fresh-waterways in the world, but our rivers and our canals. With the notable exception of the Great Lakes, which we have just cited, we are decades behind Europe in the use of these waterways. And to make a bad matter worse Federal legislation has sought to penalize the enterprise of the railroads in any attempts to develop the use of the waterways in their own interest. Just how this came about is a matter of plainly recorded history; a story of the attempts of certain ill-advised carriers to purchase and to strangle water lines, because of the competition which they offered. But the railroads which operated the huge grain and coal fleets on the Great Lakes were not throttling—they were developing. And the success of their example was slowly but surely having its effect on their fellows elsewhere across the land.

Fortunately the same hands that make a law may repeal it. And the odious anti-railroad provisions of the navigation law that accompanied the opening of the Panama Canal should be revoked at once. The railroads should be aided and encouraged in the development, through their capital and the use of their connecting land lines as well as their advantageous waterfront terminals in almost all our cities, in developing a waterborne traffic. Such a traffic, devoting itself chiefly, if not exclusively, to the lower, coarser, and slower moving grades of freight would be a tremendous relief to their rails; in the long run probably saving them huge capital expenditures for the construction

of third and fourth tracks to relieve their overburdened double-tracks. Congestion on our railroads is not always a question of overcrowded terminals.

Take that great, elaborate, and all but economically useless ditch which the state of New York is just completing from the Hudson River at Troy to the foot of Lake Erie at Buffalo—the outgrowth of the once-famous Erie Canal. As a piece of engineering the new Barge Canal is a marvel. Its locks are comparatively few, roomy, marvels of operating mechanism, its fairway is generous—together these give a water pathway large enough for a barge of 2,000 tons burden. Two thousand tons is roughly equal to forty modern freight cars—a fair length train. Two of these barges would have the tonnage equivalent of a full-length modern freight train. Fifty of them would be a genuine relief to the crowded rails of the New York Central's six tracks from Albany to Buffalo.

But the New York Central is not permitted to operate barges through the new Erie Canal from Troy to Buffalo. Oh, no! and for that matter, not from New York up the waters of the Hudson to Troy. The Federal regulation takes care of the waters of the Hudson—and keeps them freight-desolate—the sovereign state of New York prevents their passing through the sacred portals of its new \$150,000,000 canal. For, truth to tell, the new canal was designed for but two or three real purposes; to keep the port of Buffalo from falling into decay, to find jobs for numerous deserving feeders at the public trough and keep down the local freight rates of the New York Central, which it paral-

lels for its entire length. If it succeeds in these things—and it probably will—the men who control the present destinies of the state government will probably lose no time in worrying over the fact that the canal is practically completed, yet no boats of the modern type for which it was builded have been launched—or even planned. For a traffic not one one-thousandth of that at Panama, a canal of half the size and half the cost has been constructed.

Seneca Falls has been made a port, and so has Rome and so has Holley—and if the citizens of these sleepy towns doubt this they may go down and see the wharves and warehouses, the docks and levees which a benevolent state has wished upon them. And even if there are no boats to patronize these wonderful establishments they are kept atrim, and throughout all the watches of the night brilliantly alight. Perhaps the argosy is yet to plow the waters of the Erie! One thing I know. I traveled on a night train on the Delaware and Hudson not so long ago and chanced to see the great locks of the Champlain Canal—twin sister to the new Erie—all the distance ablaze with clusters of arc lamps. Traffic? Not a bit of it. There is no traffic upon the Champlain Canal. And the gods in the high heavens must laugh aloud as they read of “America Efficient” and night after night gaze down upon the brilliancy of those glaring lights upon the unused lengths of the canals of the state of New York.

“One hundred and fifty millions of dollars,” groans the practical engineer, “and the state of New York might have had instead of 350 miles of canals, 1,000

miles of railroads, every mile of the needed improved highways she has been building, many more beside. The overhead that the freight will have to pay going through the expensive and extravagant new canal is far greater than that of the best of railroads."

All of which is perfectly true. But, in the words of an economist of another generation, it is a condition and not a theory which confronts us. The canals have been built—but no vessels have been builded for them. The waterways cannot remain unused. The state has two ways by which it may force their use. It may build, equip, and operate its own barges and so bring at once a widespread experiment in government transportation that seems almost foredoomed to complete failure, or it may take steps to induce, not only the New York Central, but the other railroads which link New York and Buffalo, to build and operate barges upon the canals. Remember that these railroads are more than merely links; local freight-carriers between New York and Buffalo. And Buffalo, as you probably know, is one of the larger of the terminals at the base of the Great Lakes.

Each year millions of bushels of grain—other coarse freight as well—find their way to its docks for rail transshipment to New York or Boston, where in turn they may go into the holds of vessels for transportation overseas. The Erie Canal is as much a link as any of these railroads. And, despite the fact that the state of New York has been foolish enough to build and maintain it exclusively from its own treasury, the fact remains that it is a water avenue of national com-

munication. A glance at your atlas will satisfy you as to that.

Of one thing the state of New York may be certain. Private capital is not going to build traffic upon the Erie and the Champlain canals—particularly in view of the legislation which tends to discourage, if not actually to prevent, a company of any real size or influence operating upon the canal. The tendency of today is entirely toward centralization and consolidation. And the small independent transportation company, deprived of feeding traffic and adequate joint or independent terminals has a hard shift for existence.

I have dilated upon the New York canals because they are typical of the river opportunities that await the railroad throughout the rest of the country. You think of the old-time river boat—you still can see a few of them rubbing their blunt noses against the levees at New Orleans or Memphis or St. Louis or Pittsburgh—and you laugh at me. I might reply by calling your attention to the fact that the tonnage of the port of Pittsburgh, which moves entirely on the muddy rivers that serve it, is in excess of the tonnage of many of the greatest and most famous seaports in the world—Liverpool to make a shining comparison. And as for the river steamboat—it is capable of infinite development, of transformation from the gaudy and inefficient carrier of ante-bellum days into a mighty freight-hauler of today. The Great Lakes have witnessed a complete transformation of the type of freight vessel upon their waters. The genius that effected the revolution of their naval architecture is available

for the development of the river craft of the United States.

Need more be said? The opportunity awaits. Preceded by the necessary repeal legislation, to which I have already referred, it is, at the least, among the very largest of the opportunities that today await the sick man of American business.

Perhaps by this time you are beginning to be genuinely interested in the opportunity for the development of the freight traffic of the railroad. It is not entirely an opportunity of the operating or the engineering departments. Indeed, at the present time the greatest activities of the traffic-soliciting forces of the railroad are given to its larger customers—patrons whose shipments run in carload, if not in trainload lots. The undeveloped field of freight opportunity for the railroad is the smaller patron—the man who ships “less than carload,” but whose traffic fostered and increased would mean trainloads by the dozens, by the hundreds, by the thousands. The railroads, through their industrial departments already have begun to accomplish much along these lines. One big road—the Baltimore and Ohio—has begun, on a very large scale, to make an intensive study of the resources of the territory which it occupies. It sends a corps of its investigators—college-trained men, all of them, into a single small city and keeps them there for one or two or three weeks. When they are done with both this field work and the review of it back at headquarters, the road has in its archives at Baltimore a book of 100 pages or more which is a complete record of that city, not alone industrially, but

socially and historically as well. And if the town is clamorous for a new depot—most towns are—a study of this book will do much toward giving the answer. It may show that it finally is entitled to a new passenger gateway; and it may show also that it is careless about its pavements and its lawns, about the upkeep of the public buildings which it already has—in which case the railroad has a fairly good reason for refusing a new station.

Other railroads are following these methods—most of our roads are quickly imitative at least, even when they are unwilling to break precedent and take a definite lead. Yet, in my own humble opinion, they have not begun to even scratch the surface possibilities of traffic development.

The experience of the express companies is illuminating in this regard. Confronted with the establishment of the parcel post and threatened for a season at least with the loss of much of their small-parcel traffic to it, they began to look about to find where they might develop a tonnage with which to fill their cars and wagons. At that moment the cost of living was making one of its periodic ascents. The express companies took advantage of the situation and began the development of a food-products service direct to the consumer. The idea was popular. It met with instant approval and tided the express companies over the hardest period of their history.

These things are interesting in the abstract. In the concrete they may yet spell the very salvation of the

railroad. Two things are necessary, however, to transform them from the abstract to the concrete—brains and money.

I think that I have shown you enough already to convince you that brains is not lacking in the conduct of the railroad, despite the extreme difficulty which it is having today in gaining recruits from the best type of young men who come trooping out from the preparatory schools, the technical schools, and the colleges of the land. True it is that we have not yet raised master railroaders to take the places of James J. Hill or E. H. Harriman. Yet it is by no means certain that such master railroaders may not be in the making today on our great overland carriers. Take such men as Daniel Willard, the hard-headed, far-seeing president of the Baltimore and Ohio, Hale Holden, the diplomatic and statesmanlike head of the historic Burlington, Charles H. Markham of the Illinois Central, James H. Hustis of the Boston and Maine, Howard Elliott of the New Haven, William T. Noonan of the Buffalo, Rochester, and Pittsburgh, or Carl R. Gray of the Western Maryland—these are men to whom the future development of our railroads may safely be trusted.

Bricks cannot be made without straw. And these men cannot bring the great sick man of American business back to health without our help—without the help and cooperation of every thinking man and woman in the United States. That cooperation must come without delay, not only to relieve the plight of the railroad with which we already are familiar, but also to make it possible for him to take advantage of

the great opportunities which await him. The average railroader—feeling that the cards were all against him, that his credit at the bank was nearly nil, and that he must spend the greater part of his time on the defensive, fighting legislation that he believed to be grossly unfair—has not given much attention to these great new ideas, vastly radical in their conception and requiring in their execution much overturning of well-established methods and precedents. Yet this is not to be interpreted as showing that he lacks vision.

For remember that the sick man of American business is not too ill to realize his opportunity. But he knows that first he must regain his feet once more before he can begin important creative work. He knows that the lines along which he has been working for a long time have been cramped and restricted—conservative, to put it mildly. But he also knows that before he can begin on extensive creative work he must have several things—money and, more than money, public aid and sympathy.

And of these things—the present necessity of our railroads—we shall soon treat. But before we come to them we shall come to a consideration of a railroad problem of recent compelling attention—a problem that is both opportunity and necessity, and so deserves to be considered between them.

CHAPTER XI

THE RAILROAD AND NATIONAL DEFENSE

THE Secretary of the Navy met a high officer of the telephone company in Washington some months ago.

"I have noticed a great deal about your new trans-continental telephone line," said he. "I wonder if you could tell me how long it would take us, in a national crisis, to get in telephone communication with each navy yard in the United States and what the cost would be."

The telephone man stepped to the nearest of his contraptions. In a moment he was back.

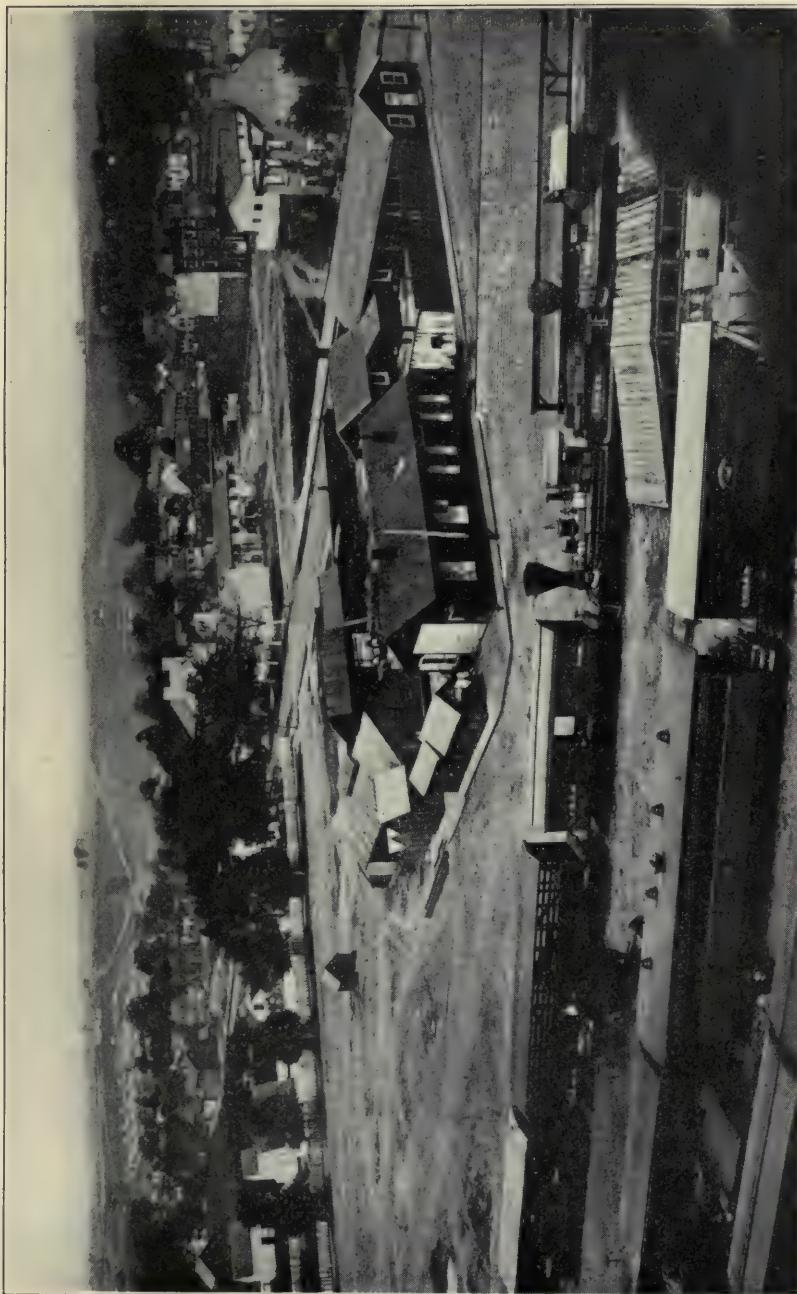
"Not more than five minutes," he said quietly, "and in such a crisis there would be no charge to the government."

The telephone, the telegraph, and the railroad are the three great avenues of national communication. In time of peace they throb with its traffic and beat in consonance with the heartbeats of its commerce. In time of war their value to the nation multiplies, almost incredibly. It is then of vital necessity that they be preserved in their entirety. It is of almost equal military necessity that they be kept close to the armies that are afield.

Of the telephone we have just spoken. The services of the telephone at the time of the Civil War are too well remembered today for it to be ignored in any future national crisis. But it is of the railroad that we are talking in this book—the railroad that brings the food to your larder, even the milk to your doorstep; that keeps the coal upon your hearthstone and the clothing upon the backs of you and yours; that carries you to and fro over the face of the land. It is the railroad, that living, breathing thing that girdles the whole land and sends its tentacles into even the smallest town, that, as you already know, is your servant in times of peace. How can it be made to serve you in time of war?

When the last great war was fought in the United States, our railroads had barely attained their majority. In the days of the Civil War there were no railroad systems, as we know them today. Instead there was a motley of small individualistic railroads, poorly co-ordinated. They were, for the most part, poorly built and insufficiently equipped. Nothing was standardized. Even the track-gauges varied and passengers or freight going a considerable distance found it necessary to change cars at intersecting points.

Nevertheless, the railroad played a tremendous part in the War of the Rebellion. Because of it Sherman made his conquering march from Atlanta to the sea. He was something of a railroader himself, that doughty general. And upon his immediate staff were expert railroaders. Over the crude railroads of the Georgia



THE RAILROAD IN THE CIVIL WAR
This picture of a section of Alexandria, Virginia, was taken in 1864 and shows the cars and engines of the United States Military Railroad of that day.

of that day, with the aid of their war-racked cars and locomotives, they supplied the commissary of the Sherman army as it made its way across a devastated land.

In the North the military railroad, reaching down from the very portal of the Long Bridge at Washington, its railheads almost always touching the Union lines, was an almost indispensable factor to the Army of the Potomac. The Baltimore and Ohio was hardly a less important factor. It paid a high price for the accident of location. One of Stonewall Jackson's earliest and most brilliant achievements was the seizure of eight locomotives from its roundhouse at Martinsburg and their movement, some forty miles, over a dirt road to Winchester, Virginia, where they found the tracks of a part of the railroad system of the Confederacy. Later on Jackson returned to Martinsburg and helped himself to twelve more B. and O. locomotives, also moving these over the turnpike to Winchester. He knew and Lee knew that even a clumsy balloon-topped, wood-burning locomotive was worth 500 horses in transport service. And the South was none too plentifully supplied with locomotives even before the war began.

The most of the work of the railroads in the Civil War was not dramatic. But it was thorough—the carrying of men between the cities of the Middle West and the Army of the Cumberland. At first it was chaotic, but it became well systematized. The direct line between New York and Washington—although then composed of four separate railroads—was recognized as a route of vast strategic value. The men who

handled troops and supplies over it, in doing so qualified themselves to assume the mastery of the great railroad systems that were to spring into being at the close of the war—as a result of both construction and consolidation.

In 1898, when the country was again plunged into war, preparation of the railroad lines of the land had grown to maturity. Unfortunately, however, the theater of the war was close to the corner of the land which was then most poorly equipped with railroads. But the standardization of the operating conditions had been largely accomplished. One could run a car or locomotive upon practically every important line in the land without changing the gauge of its wheels. This last, of itself, was important. It meant that the equipment of larger and stronger roads to the North could be sent down to the Plant System and the Florida Central and Peninsular—barely equipped for ordinary purposes—which were suddenly called upon to handle an extraordinary traffic. This, of itself, was a mixed blessing. For the borrowed locomotives were often too heavy for the light rails and long bridges over the Florida marshes. Derailments were frequent and the delays they entailed, protracted.

The men who went to Tampa in that hot summer of 1898 have not forgotten the Florida Central and Peninsular nor the Plant System, even though those two railroads have now passed into history. Nor has the War Department forgotten them. On one memorable occasion, the Quartermaster started a special

trainload of emergency army supplies south from Philadelphia to Tampa. In order to make sure that the train should go through promptly, he placed one of his own representatives upon it, with orders to push it through. The train disappeared. After three weeks, the Quartermaster's Department found it on a siding at a place called Turkey Creek, a good eighteen miles from Tampa—held there because of the hopelessly congested terminal at the waterside. And they never yet have found the special representative who was to put it through.

These abominable conditions, the conditions that made it necessary to take from four to six days from the great mobilization camp at Chattanooga to Port Tampa, a journey which should have been done in from one-half to one-third of this time, were not to be charged to the poor men who were struggling to operate those inadequate railroads. They were doing the best they could, without plan and without facilities. And it is interesting to note in this connection, that in that same memorable summer, an appeal came to Washington not to put more than 500 troops a day through the Jersey City gateway for fear of congesting the terminals there!

More recently the railroads of the South have been called upon again to handle troops and munitions and commissary. Of course the problems that have confronted them upon the Mexican border are hardly comparable with those of the Civil War or the Spanish-American War. Yet on the very morning that the

entire country was shocked by Villa's audacious raid upon Columbus, New Mexico, the heads of the great railroad systems that come together at El Paso were alert and ready for any orders that the War Department might give. At 6:45 P.M. that evening a telegraphic request for trains came from Washington to the general headquarters of the Southern Pacific lines at Houston. Five thousand troops were to be moved from the camps at Galveston and near-by Texas City, and as quickly as possible. Early in the morning the trains began moving. The railroad had made a full night of it. Throughout the night they had brought their extra equipment into Galveston from San Antonio, from New Orleans, from Shreveport—every important operating center within twelve hours' run. The trains were ready as quickly as the troops. And they made the long run of 881 miles up over the long single-track to El Paso in an average of thirty-six hours—under the conditions, a really remarkable performance.

The Santa Fé and the Rock Island operate direct lines from Chicago to El Paso. They were called upon during many months of the past year to carry munitions south to the border—particularly motor trucks—and were not found wanting. The Rock Island with its complementary line, the El Paso and Southwestern, carried 170 motor trucks and water wagons from Chicago to El Paso, 1,446 miles, on a fifty-hour schedule. The "limited" with all of its reputation for fast running and its high-speed equipment only makes this distance in forty-three hours and a half, while the



THE RAILROAD "DOING ITS BIT"

Hauling a trainload of army trucks and supplies from Chicago to Gen. Pershing's expedition "somewhere in Mexico."

ordinary schedule for freight—which is the equipment upon which it was necessary to handle the motor trucks and the water wagons—is 129 hours and 50 minutes from one city to the other. But Pershing needed the automobiles. They were vital for his expedition. And it was a part of the day's work for the railroad to carry them down to the border in record time.¹

The job of handling the troops on the Texas line has hardly been more than part of the day's work. The railroaders down there will tell you that. The real

¹ "During 1916 the largest movement of troops took place in the United States, since the Spanish-American war. It began early in the year when regular army detachments of cavalry, infantry, artillery and engineers were sent to the border on March 11, March 20, May 9 and June 11. The transportation of these organizations was accomplished in an excellent manner, in exceptionally good time, and without accidents of any nature. On May 9, the militia of Arizona, New Mexico, and Texas, were called to the border, and on June 18, 1916, the National Guard troops of all the other States were called into the service of the United States, and directed to assemble at their state mobilization camps. From these points to designated stations on the frontier transportation arrangements were under the direction of the War Department. The troops began leaving their mobilization camps about midnight on June 26. On July 1 there were en route to the border from various sections of the United States, 122 troop trains, carrying over 2,000 freight, passenger, and baggage cars, with a total strength of 36,042 men. On July 4, 101 troop trains were en route, and 52,681 militia troops (not including Arizona, New Mexico, and Texas) were either at the border or on the way thereto. From the beginning of the movement up to July 31, 111,919 militia troops were moved to the international boundary.

"Some idea of the task imposed upon the railroads of the country by the transportation of the National Guard may be had when it is considered that 350 trains were necessary to carry the first 100,000 troops. Over 3,000 passenger cars, including standard Pullman and tourist cars and coaches, were provided, and in addition about 400 baggage cars, most of which were equipped as kitchen cars for serving hot meals en route, 1,300 box cars, 2,000 stock cars, 800 flat cars, and approximately 4,900 locomotives and crews, not including switching engines, yard

job of the railroad recently has been laid overseas in the nations that are fighting so bitterly for mastery. The German military use of railroads is most interesting because it is the best. American travelers for years past have noticed upon the trucks of each separate piece of rolling stock in the Empire, its military destination, as well as cabalistic figures to denote its carrying capacity in men and horses and pounds of freight. Yet these were but the surface indications of a great plan—whose formulas had been worked out and rested

engines and their crews. The call upon the railroads for the transportation of the militia occurred in the fortnight which includes the Fourth of July, the time of the greatest density of passenger travel in the eastern States. Instructions were issued by all railroads concerned that the movement of troop trains was to be given preference over other travel, and it is believed that this was done in all cases.

"To have effected the entire movement of all the troops in tourist sleepers would have required approximately 3,000 cars, or five times as many as were in existence. The Pullman Company, by utilizing some standard sleeping cars, made available for the movement 623 tourist cars. In all cases where it was possible to do so tourist equipment was furnished, and where they were not immediately available the troops were met en route and transferred to tourists in every possible case. Official reports from all military departments show that no organization moved in coaches in less space than three men to every four seats, and wherever possible two seats for each man. The total number of men transported in coaches averaged 30 men to each coach.

"Although the movement of organized militia came at a time when the commercial traffic on the railroads was the largest in years, it was accomplished with very little interference with regular train service, and with no congestion whatever, either at initial or terminal points or en route. In July there were moved into the Brownsville, Texas, district 106 special trains, composed of 1,216 cars of passengers and 1,201 cars of freight for the army, in addition to 680 cars of army supplies, handled in freight trains, and the usual commercial traffic. This district is reached only by one single-track line, and all rolling stock had to be returned over the same line.

"The concentration of the militia on the Mexican border and the mobilization for the great war in 1914 are not comparable, as all civil

on the shelves of the war headquarters in Berlin. How well the plan has worked we all know now. For the first time in its history the railroad has become an active fighting factor—not merely to be content with the bringing of powder and shell and food and equipment up to the bases of the fighting lines; not merely to assemble troops, in a comparatively leisurely fashion, or to take tired and sick and wounded men back to their homes; but to be a striking arm, if you please, moving whole brigades and even armies with all the tensity and

traffic was suspended in Europe to make way for military movements, and the distances involved in the movement to the Mexican border were very much greater than those in Europe. The longest run in Germany was about 700 miles, and in France much less, whereas the distances traveled by the troops in the United States varied from 608 miles, in the case of Louisiana troops, to 2,916 miles in the case of Connecticut troops. The majority of the troops came from northern and northeastern states and were carried over 2,000 miles, in most cases in remarkably fast time. For example, the Seventh New York Infantry with 1,400 men, equipment, ammunition, and baggage left New York at 2 p. m. on June 27, and arrived at San Antonio, Texas, at 8:30 p. m., on June 30, a distance of 2,087 miles. Shipments of freight were made from Washington and vicinity to the border in four days, from New York and vicinity in five days, and from the Great Lakes in a little more than forty-eight hours.

"As a specific example showing how the cooperation of the railroad companies assisted the army, there may be cited the case of the first motor trucks purchased for the expeditionary forces in Mexico. Twenty-seven trucks were purchased under bid in Wisconsin on March 14. They were inspected and loaded in fourteen cars; the men to operate them were employed and tourist cars furnished for them, following which a train was made up which left Wisconsin at 3:11 a. m., on March 16. It arrived at Columbus, N. M., 1,591 miles away, shortly after noon on the 18th; the trucks were unloaded from the cars, loaded with supplies, and sent across the border, reaching General Pershing's command with adequate supplies of food before he had exhausted the supplies taken with him from Columbus."—From the report of Quartermaster-General Henry G. Sharpe, of the United States Army, as reprinted in the *Railway Age Gazette*.

speed and resource at its command. In other days you might laugh at the peaceful little German passenger train, making its leisurely way in all the pomp and circumstance that only an Empire may show. But you cannot laugh at the German military train, black with troopers, darting its way across the Kaiser-land with a speed and definiteness that is all but human.

It has been stated that the real reason why the Germans failed to reach Paris in their memorable drive of September, 1914, was that even their remarkable system of military railroads failed in this supreme crisis. If this be so, it must be that the task placed upon them was superhuman. For it was just such military trains as we have just seen, multiplied in dozens and in hundreds, that moved whole brigades to southern Galicia during the first two weeks of April, 1915—a distance, roughly speaking, equal to that from Boston to Detroit. It was the military plan for the railroads of Germany that brought the regiments out of the trenches in Arras in the last week in June of that same year and on the Fourth of July had them hammering at the might of Warsaw. And Warsaw is 800 miles from the low fields of Arras. Not until the war is over will the whole military workings of the German railroads be known. But examples such as these show that they did work. And it may be remembered that when the German army began flowing in a tidal fashion up over the Russian steppes they came to von Hindenburg and reminded him of Napoleon and the retreat from Moscow. And von Hin-

denburg showed his great teeth and remarked that Napoleon had had no railroads.

"The bread which our soldiers eat today in Windau was baked yesterday in Breslau," he added. And it takes only a single glance at the map to see that Windau is approximately 500 miles distant from Breslau. "We drink German mineral water and we eat fresh meat direct from Berlin. If necessary, we can build fifty miles of railroad in two days. Therefore it is nonsense to speak now of the times and the strategy of Napoleon."

Here, then, is another of the great practical lessons that these three fateful years are teaching America. Consider now how she may avail herself of this particular lesson—the coordination of her great systems of more than a quarter of a million miles of standard steam railroads with an orderly and intelligent military plan, against any invasion. Other nations have had to build railroads with a particular relation to military strategy. Keen-minded Belgians and Frenchmen long ago noted the tendency of Germany to build double-track railroads to comparatively unimportant points upon her western front—since then they have had the opportunity to see the wartime efficiency of these lines, suddenly turned in an August from practical stagnation into busy, flowing currents of military traffic. Of the strategic value of double-track routes, much more in a moment. For this moment consider the location of the principal rail lines of the United States—particularly in their reference to the defense of the nation.

The "vital area" of the country, so called, is the coast territory between Portland, Maine, and Washington, District of Columbia, and resting east of the sharp ridges of the Alleghenies. Here is a great part of the wealth, the population, and the banking of the United States. Fortunately, however, this is the district best supplied with efficient railroads, double-tracked, triple-tracked, quadruple-tracked. And a reference to the map will quickly show that these lines are particularly well adapted to coast defense. From the extreme northeastern tip of Maine down to Key West and around the white and curving shore of the Gulf to Brownsville and the mouth of the Rio Grande there is hardly a strategical point that is not well served by existing railroads. North of Boston, the Boston and Maine and the Maine Central systems run, not alone parallel to the coast, but by means of a network of other lines intersecting their coast lines, are prepared to serve them from the inland country every few miles. The importance of this last fact comes to mind when one realizes the possibility of an invading force eluding our naval patrols and cutting our coast line railroads. With a network of adequate line behind the one actually closest to the shore, important communication would not be interrupted for any considerable time.

Boston is linked with New York by three distinct routes of the New Haven system; with Chicago by the Boston and Albany, in practical effect a branch stem of the New York Central system. Nor are these three stems the only protection that the New York, New Haven, and Hartford Railroad extends to New Eng-

land. The exposed and bended arm of Cape Cod is a weak point in the nation's "vital area." The New Haven holds and controls the one-time Old Colony Railroad which reaches the old whaling ports of Plymouth, New Bedford, and Provincetown—a railroad which might at any time become of vast strategic importance and which should be at once double-tracked, by the Federal government, if necessary, for the same reason that Germany double-tracked her lines leading to her French and Belgian border. And only second in importance to the Old Colony in case of an attempted invasion from across the Atlantic is the Long Island Railroad, stretching straight out of the city of New York to the very tip of the island. Between the Rockaways and Montauk there are many points on the south edge of Long Island that offer possibilities to landing parties. And it is essential that the railroad that serves this peculiarly barren bit of coast within two hours' rail run of the largest city upon the American continent be prepared to serve it well in the case of military necessity. Fortunately the Long Island Railroad has been vastly improved—its double-track increased—within the past ten years. It is no longer barred by the East River from actual track connections with the other railroads of the country. The great Pennsylvania tunnels already make it possible in a military emergency to pour filled train and empty, on short headway, into Long Island. The strategic value to the nation of these tunnels will soon be supplemented by the Hell Gate Bridge over the East River which will bind the Pennsylvania and the Long Island railroads

with the main lines of the New Haven and the New York Central. This bridge cannot be completed too quickly. It is of immediate strategic necessity.

From New York south the same main-stem railroad that served the North so well in the days of the Civil War still stands. It has, however, ceased to be a chain of railroads, with ferriage at Havre de Grace and heartrending transfers by horse cars across Philadelphia and Baltimore, as it was in the days when New England and the York State and the Jersey regiments went down to Washington and over across the Potomac. From Baltimore north, this ancient stem is now the Pennsylvania Railroad, four-tracked or double-tracked the entire distance, rich in surplus locomotives and cars, and halted no longer by either the Delaware or the Susquehanna rivers. Since the close of the Civil War the Pennsylvania has builded its own line from Baltimore to Washington, while the Baltimore and Ohio, which owned that section of the ancient stem, has thrust its own line up into Philadelphia, coming from that point to Jersey City over the main-line rails of the Philadelphia and Reading and the Central Railroad of New Jersey systems. This means that there are today between these parallel railroad systems eight main-line tracks from New York to Philadelphia and from four to six from Philadelphia through Baltimore to Washington. It is a combined railroad trunk of which a nation might well be proud. And this nation may yet be profoundly grateful that it has such a railroad trunk, through the heart of its "vital area."

Consider again this "vital area"—the great metropolitan districts of Boston, of New York, of Philadelphia, of Baltimore—almost a continuous city, in fact, all the way along the Atlantic coast from the south tip of Maine to the Potomac. It stretches west to the Alleghenies, in fact we may say a little beyond them, to include such vigorous communities as Pittsburgh and Cleveland and Buffalo. Here in this "vital area" of the nation are more than eighty per cent of its munition-making plants, its largest hard coal and soft coal deposits, its steel-making plants, its greatest shipyards and its three most important navy yards. Major General Leonard Wood has said that 1,500,000 men would be necessary to properly defend the coast-line from Portland, Maine, to Washington. Therefore the railroad main stem that connects these cities and the many larger cities between them is the most important military base line upon this continent. It needs all the resources of two- and four- and even six-tracked railroads, for General Wood has gone on record as saying that in a national crisis it might be necessary to move half a million men on this great base line within the course of ten short hours. On a conservative estimate these would require 500 trains—trains which, stood end to end, would reach all the way from New York to Washington or to Utica. Such a train movement would stagger even the imagination of a passenger-traffic manager accustomed to figure the "business" in and out of a national inauguration or a big football game at Princeton or New Haven or Cambridge.

A railroader whose pencil has a quick aptitude for

figures has estimated that Germany has seven and a half locomotives for every ten miles of track. We have one-third that proportion. Yet the preponderance of what our railroad men like to call "motive power" lies east of the Mississippi River and north of the Ohio. The same thing is true of cars—cars of every sort and variety. That is not the problem. Here it is.

Suppose, if you will, that an enemy finding an entrance to America on the sandy south shore of Long Island—to choose the spot most in the favor of the writers of the lurid fiction of an imaginary war between some European nation and the United States—has actually succeeded in capturing the city of New York. The great military base line of America is broken at its most important point. How are Major General Wood and the rest of the men who are puzzling the great problem out with him, going to move a half-million men—a half or a quarter of that number from New England over into Pennsylvania or down toward the defense lines around the national capital?

Take a look at your railroad map. Look sharply! You will need to look sharply to see the second line of communication between New England and the rest of the nation. There it is—a thin and wavering railroad line, stretching from New Haven up through the Connecticut hills, spanning the Hudson on the slender tracery of the Poughkeepsie bridge and threading still more hills until it reaches Trenton, New Jersey, and the main base line once again. The nation may yet thank a gentleman named Charles S. Mellen for that second line of communication. For while the much



AMERICA'S
The workshops and the coalbins of the United States, together with the principal railroads which
hundred miles



"AL AREA"

protect them. This bird's-eye map made as though viewed from an aeroplane at a point five
of Cape Cod.

discussed ex-president of the New Haven did not build the Poughkeepsie bridge or the New England lines leading to it, he at least caused both of them to be double-tracked, curves and grades ironed out until one heavily laden coal train could follow close upon the heels of another.

That was Mellen's motive in making a large part of this second line of communication into first-class railroad—the perfecting of New England's long, lean arm down into the Pennsylvania coal bin. But no matter what his motive—he has never pretended to be altruistic—his coal line is of great strategic value. Not alone does it circle around metropolitan New York at a reasonably safe distance, but it intersects the great trunk lines running west from the seaboard—routes that would be of unspeakable strategic value in the case of the seizure of our largest city. For these would be the lines that would have to feed our army—not with mere food, but with men and guns and shells and all that with these go. At Poughkeepsie this second line of communication intersects the main stem of the New York Central, in turn the main stem of the Vanderbilt system reaching almost every important city west of the Alleghenies and east of the Mississippi and north of the Ohio. At Goshen it intersects the Erie Railroad, come in these recent years from being a reproach and a byword into one of the most efficiently operated railroads in the entire land. Farther south it intersects the Lackawanna and the Lehigh Valley—roads rich in money and in resources.

Suppose now the second line of communication is

gone—the graceful span of the Poughkeepsie bridge a mass of twisted steel in the channel of the Hudson. What is the third line of communication? It consists of the aristocratic old Boston and Albany leading due west out of Boston, and threading Worcester and Springfield and Pittsfield—each of these a manufacturing center of no mean importance—and finally coming to Albany, and of the Delaware and Hudson, which, bending southwest from Albany, finds its way through the anthracite hills of Pennsylvania and eventually by way of Harrisburg to the main base at Philadelphia or Baltimore. This line also intersects the east and west trunk lines.

The fourth line of communication? Alas, we must believe that the capture of these three widely separated lines is almost humanly impossible. When they are gone the New England head is fastened to the body of the nation only by a thin artery indeed. For the fourth line of communication is a wavering, roundabout railroad, practically all single-track, which follows close to the Canadian border. It is of conceivable military importance only in the unthinkable event of a quarrel with our cousins to the north. In such a catastrophe this line, of potential military value, could be made of actual value only by double-tracking and by almost complete reconstruction.

Enough now of the possibilities of the cutting of the main military base of the nation. Go south with me for a moment from Washington and see the strategic position of our railroads along the more southerly por-

tions of the Atlantic coast. Cross the Potomac on the nameless steel structure that superseded the historic Long Bridge more than a decade ago and yet is of hardly less military importance. For the trains of every railroad running south from Washington must cross upon its tracks. Of these railroads, three are the trunk stems that, while running many miles back from the actual coast, still serve it. They are the Southern Railway, the Seaboard Air Line, and the Atlantic Coast Line. These three railroads and their direct connections reach from Washington to Norfolk, to Charleston, to Savannah, to Mobile, and to New Orleans—the most important of the southeasterly ports. One of their most interesting connections crosses the keys of Florida and does not stop on its overseas trip until it reaches the last of them—Key West, which is almost within scent of the cigar fumes of Havana. If we ever had to send another army into Cuba, Tampa would be completely out of it.

There is hardly any comparison between these trunk railroads of the Southeast and the lines that struggled so hard to handle the armies at the time of the Spanish-American War. They have been double-tracked for long distances, more generously supplied with locomotives and cars, although they are still quite a way behind their northern brethren in this regard. Still it would not be a very difficult matter in a national crisis to move great fleets of rolling stock from one corner of the land to another. By careful advance planning and a study of rail weights and bridges this would become a comparatively simple matter.

Ignore, for the moment, the strategic value of the many railroads in the center of the land; forget the possibility of an army striking us upon our Atlantic coast. Let us turn our faces toward the west coast, toward the great stretch of barren and unprotected Pacific shore from British Columbia down to San Diego. And before we begin tracing strategic routes upon the map let us close our eyes and go back into history.

Do you recall that inspiring picture in the old geographies of the completion of the Union Pacific Railroad—the two doughty locomotives, one facing west, the other east, with their cowcatchers gently touching, while a motley of distinguished guests are indulging in oratory and other things? Do you happen to recall why the Union Pacific was builded, why the national credit was placed behind its construction?

Military necessity is the answer. The men who went before the Congress of the fifties and the sixties and who argued ably and well for the building of the first transcontinental railroad across the United States laid great stress upon this question of military necessity.

“Only by the building of such a railroad as this,” they argued, “can the Union be held absolutely indissoluble.”

So came the name of the road.

Today one looks at the military necessity of the Union Pacific Railroad from another point of view. Now open your eyes. Look at your map and see that military value of this first great transcontinental railroad. Its chief eastern terminal is at Council Bluffs,

on the bank of the Missouri River and but an overnight ride from Chicago, with which it is connected by six excellent railroads—most of them double-tracked. Its northerly main stem is double-tracked practically the entire distance to Ogden, Utah, an even thousand miles distant from the Missouri. A twin main stem runs from Cheyenne down to Denver and east to Kansas City, where it enjoys direct connections to St. Louis, Memphis, and the entire South. The North and East feed the road chiefly through its Council Bluffs gateway.

At Ogden the Union Pacific divides into three great feeding lines—the main one extending due west to Sacramento and San Francisco, with one to the north reaching Portland and Seattle and another to the south running direct to Los Angeles. While these three lines are nominally separate railroads, they are, in effect, component parts of the Union Pacific System. In any military crisis requiring the rapid transcontinental movement of troops they would become extremely important parts.

The Union Pacific is, of course, supplemented by other transcontinentals. To the south rests the long main stem of the Santa Fé, which boasts not only that it is the only railroad with its own rails direct from Chicago to California, but that it already has more than fifty per cent of its main line double-tracked. Farther south still is the Southern Pacific, which, although its real eastern terminal is at New Orleans, enjoys a practical Chicago terminal over the lines of the Rock Island. In the north are three American

transcontinentals—the Milwaukee, the Northern Pacific, and the Great Northern. While the Milwaukee is the only one of these with its own rails from Chicago to Seattle, its two rivals maintain a brisk competition by the use of the Burlington and the North Western systems between Chicago and St. Paul.

By the use of these roads it would be possible to throw a great number of troops and munitions across to almost any section of the Pacific coast and in a very short time. And for more than twenty years there has existed a north and south trunk line, that would make it possible to obtain a flexible use of troops between San Diego, Los Angeles, San Francisco, Portland, and Seattle. There are lines close to the coast all the way from Eureka past Coos Bay to Astoria and the Puget Sound country. The main north and south trunk lies anywhere from fifty to a hundred miles inland from the coast all the way from Los Angeles to Seattle. Perhaps it is well that this is so. It is unfortunate only that no more than a comparatively small portion of it is double-tracked and that a large part of it through northern California and Oregon is so threaded through the high mountains as to be very difficult to operate. Military strategy demands that this important trunk line be made possible to operate at highest efficiency. That can only come through grade correction and a completion of double-track.

I have laid stress and constant repetition upon this question of double-track, simply because a double-track railroad is almost ten times as efficient as a single-track

railroad. That should be apparent to a layman even upon the very face of things.

The other day I sat in the Southern Pacific offices at Houston, Texas, and talked with a genius of a railroad operator in regard to this very thing. He was telling of the remarkable record made by his road in getting the troops across from Galveston to El Paso. I asked what was the best he could do in a real emergency—an emergency calling for perhaps the movement of 50,000 troops, instead of 5,000.

"Under normal conditions we can put five trainloads a day of troops across Texas, in addition to our regular traffic and keep them moving at a rate of from seventeen to eighteen miles an hour, including stops. We could put on more trains, but this would not accomplish much except to tie up all of them. We have to figure the capacity of our main line very largely by the frequency of the passing sidings."

"Suppose a crisis should arise—a crisis which demanded an even quicker movement of troops?" I asked.

He did not hesitate in his reply.

"In such a crisis we would pull all our other traffic off the line and move from ten to twelve trains a day."

Which, translated, would mean at the most from five to six regiments of 2,000 men and their accouterments. And this on a railroad with a tremendously high reputation for efficient operation. Here is the case for single-track.

Now consider double-track. The Union Pacific moves in summertime eight through passenger trains west-bound out of its ancient transfer station at Council

Bluffs, an equal number east-bound. Frequently there are extra sections of these trains, to say nothing of a pretty steady schedule of freights. Yet even this by no means represents the capacity of its low grades and double-track to Ogden. The Pennsylvania Railroad in twenty-four hours has handled 121 trains bound in a single direction out of its great yards at Altoona, which means a train every eleven minutes and a half. While the main line of the Pennsylvania is four-tracked, that traffic was freight and handled almost entirely upon one of a pair of freight tracks. If such a performance was possible in the steep hills of the Keystone state, it would hardly be exaggeration to suggest that the Union Pacific could handle a military train bound west from the Missouri at least every thirty minutes. Taking 1,000 men to the train as a moderate estimate, this great road could dispatch nearly 50,000 men a day without in any degree congesting itself. And while its central connecting stem at Ogden—that portion of the Southern Pacific once known as the Central Pacific—is by no means completely double-tracked, in a military necessity it could be made so at once by the simple expedient of using for a one-way movement of the trains, the newly built Western Pacific which parallels it all the way from Ogden to San Francisco.

Here, then, is the answer, here the way that in a military crisis we may also gain a double-track transcontinental route across the north edge of the country. We simply need to take two out of the three single-track lines there—the Milwaukee, the Northern Pacific, and the Great Northern—and by keeping the

traffic moving in a single direction, we gain at once a practical and effective double-track railroad. This method can be repeated in the South from Chicago to El Paso and thence across to Los Angeles, by a similar operating combination of the Santa Fé, the Rock Island, the El Paso and Southwestern, and the Southern Pacific. The map itself will suggest numerous other combinations of the same sort.

Physically, the railroads of the United States are today wonderfully well adapted to any military crisis that they might be asked to meet. And the constant raising of their efficiency during the past decade, because of the growing tendency of expenses to overlap income, has done nothing to impair their military value. Potentially, they are fit and ready. Ready, they are actually; fit and ready is an entirely different matter. Let us come to it, here and now.

Suppose that tomorrow the "cry of war" were to resound from one end of this country to the other, that an army of at least 1,000,000 men were to spring into being as quickly and as easily as all these pacifists aver. Immediately the railroads would be called to their superhuman tasks of transporting men and horses, and motor trucks, munitions, and materials of every sort. And somewhere this great problem of military rail transport would have to center. Today, in times of peace, it centers in the Quartermaster's Department of the War Department, which contracts with the railroads for the carrying of troops and supplies just as any private organization might arrange. The existing

study of the War Department provides that in the declaration of war the railroads shall be operated by the Board of Engineers. Yet to a large extent this earlier study has been superseded by President Wilson in the appointment of a Council of National Defense to take over the industrial, commercial, and social mobilization of the United States in case of a great crisis. As a member of this council Mr. Wilson has appointed Daniel Willard, of the Baltimore and Ohio Railroad, in direct charge of the transportation and communication, in such a crisis. Of this, much more will be said in a moment.

It is conceded that in any great national crisis the government would immediately take over the operation of the railroads. The advocates of government ownership point to this as a clinching argument for their proposition. As a matter of fact it argues nothing of the sort. The United States government, by act of Congress early in the Civil War, took over the operation of all the railroads, although it actually took control of those roads only in the theater of the war. It also took over Thomas A. Scott, vice-president of the Pennsylvania Railroad and a remarkable railroader, and placed him in charge of the military roads—which, in itself, is significant. Under Scott's brilliant leadership were such men as David Craig McCallum and Herman Haupt, the last of these a man whose combined knowledge of army organization and railroad operation made him almost invaluable to the government. And the real success of the Federal military railroads in the Civil War was due to the fact that



ROCK ISLAND GOVERNMENT BRIDGE

Built and owned jointly by the United States Government and the Rock Island Railroad, it crosses the Mississippi, connects Rock Island and Davenport, and is a point of military importance.

the government officers who operated them were expert railroaders borrowed for the nonce from civil life.

It would be hardly less than a calamity for the army to attempt to operate the railroads of the United States or any considerable part of them. The army officers know that. Leonard Wood knows it. The War College down at Washington knows it and has prepared a new study of the new problem recognizing the necessity of keeping the railroads in any crisis operated by railroad men. An army man is no more competent to operate a railroad than a railroader is to command a brigade upon the field of battle.

There is a railroad executive up in New England who well remembers the days of the Spanish war. At that time he was trainmaster of the Southern Railway at Asheville, North Carolina. His division ran from Knoxville, Tennessee, down to the main line at Salisbury—242 miles. It threaded the Blue Ridge Mountains and did it with difficulty. It was a hard road to operate at the best. And in 1898 Fate called upon it to handle a considerable number of troops from the concentration camp at Chattanooga down toward the embarkation stations at Norfolk and Newport News. That was the difficult problem, with the high grades, the many curves, and the few passing sidings. To accomplish it meant careful planning. The division staff made such a plan. Each meeting point for the regular trains and the extra was carefully designated and a time allowance for meals at Asheville was arranged; forty minutes, no more, no less.

Being well planned, the operation went along

smoothly—that is, until the road was forced to break away from its own scheme. The trainmaster was about to dispatch one of the troop trains from Asheville, its forty-minute meal period having nearly expired, when an assistant informed him that the officers of the regiment it carried were not aboard. The trainmaster hurried downstairs. The officers were having their after-dinner coffee and their cigars and showed no disposition whatsoever to hurry out to the cars. He made up his mind quickly. He knew that if this train was delayed ten minutes the whole operating plan would go to pieces and the entire division become almost hopelessly congested. He went to the commanding officer and quickly explained this to him.

The colonel of the volunteers quickly waved him to one side.

"This train 'll start when I'm good and ready to have it start," he said huskily.

The trainmaster stood his ground.

"I'll have to send it on in three minutes," he said politely, "and you gentlemen will have to take your chance in getting on another section."

The army man (volunteer) swore a great big oath, and added:

"You make a move to start this train before I give the word and I will make you a military prisoner."

The railroader capitulated, although today he is sorry that he did not stick it out and go to prison. And the operating schedule of his division went to pot. Stalled trains piled up for miles along its main line and its sidings. Incredible delays were the immediate

result of one man's tinkering with the delicate operating structure of the railroad.

But given even a fairly free hand, a measure of authority, and some opportunity for preparation, the railroader will be able to give a good account of himself in the military handling of troops. He has shown that during the past year when he has been called upon to hurriedly move our army toward the south border of the nation. I have told already of the records made on that occasion—how long trains, filled with troops and provisions and munitions of war, were sent down to the border in double-quick time. One thing I have not yet told—the provisions for housing and feeding these troops while they are on the road.

It now is definitely understood that troop movements of the regular army, volunteers and militia as well, are to be made with sleeping equipment, particularly on long-distance runs. The practice is to use the so-called standard Pullmans for the officers, the tourist-sleepers for the men—three to the section. Obviously it is out of the question to feed a regiment, or even a portion of it, in dining cars. Sometimes it is difficult to make last-minute arrangements at eating-houses along the line, even if the regiment wished to spare the time to detrain for a meal. The Pullman Company has solved the problem for at least the ordinary movements of the army by the construction of kitchen-cars. These are long, fourteen-section tourist-sleepers, with an unusually capacious kitchen at one end. This kitchen can easily feed not only the car in which it is located, but

the occupants of an entire train of average length. It is not difficult for it to give three square meals a day to 300 hungry men. Here is a bit of practical efficiency that is worthy of passing notice.

Of course no one expects that in a time of great military urgency the troops would ride in Pullmans. They would be lucky to get day coaches, and in the final stress of things, it would probably be found necessary to quickly cut windows in the sides of freight cars and hurriedly equip them with seats. A Yankee box car so equipped would be a good deal better than a good many of the small cars in which the German army has been so quickly and so efficiently transferred from one side of that kingdom to the other.

It is the flexibility of the standard equipment of the American railroads that today offers perhaps the largest opportunity for its successful military use. A single instance will prove this. A man—his name is L. W. Luellen—has devised a scheme for mounting heavy rapid-fire ordnance upon steel flat cars. Obviously it would be quite impossible to fire even a miniature “big Bertha” from anything so unstable as a railroad car. But Mr. Luellen has met this difficulty by arranging to have built at intervals not exceeding thirty miles along the entire Atlantic coast, short sidings flanked by heavy concrete bases.

He, too, has studied his railroad map, as a little while ago we were studying it. He has found that a comparatively small number of guns with a fifteen-mile shooting radius, could by means of these permanent bases at thirty-mile intervals protect the entire Atlantic

coast, a good portion of the Pacific as well. The method of their operation is simple. The guns would be sent to any section they were needed on fast passenger schedule. It would be a matter of minutes rather than hours, for the flat cars to be run in between the permanent concrete bases and by jacks transferred to them from the cars.

The scheme is so simple that it seems absurd. But the War Department experts say that it is remarkably practical. And Mr. Luellen, who seems to know what he is talking about, says that it would not cost more than \$10,000,000 to install it—guns, cars, and permanent bases, along the North Atlantic seaboard. Here is a form of railroad preparedness that would seem worth the careful attention of the national legislature.

Already the American army has what is known as the Medical Reserve Corps, made up of physicians and surgeons all the way across the land. The great national organizations of civil engineers are beginning to plan a similar reserve in the ranks of their own profession. In the American Railway Association, the railroads of this country have a common meeting ground and an organization that can quickly take definite steps toward meeting the Federal authorities in planning the military use of the transportation routes of the country. There is no mistaking the patriotism of the railroaders. Some of them have smarted in recent years under what they have believed to be an unwarranted intrusion by the Federal authorities into

the affairs of their properties, but at heart every man of them is loyally American. And every man of them is not merely loyal in a passive sense, but is both willing and able to aid the government with all the resources at his command.

Take the critical situation which broke upon the country early in the present year when diplomatic relations with Germany suddenly were broken and the possibility of war loomed high. President Wilson, acting under the authority which Congress had vested in him immediately appointed a committee of seven prominent Americans—a Council of National Defense. As a member of this Council and in immediate charge of the nation's transportation and communication in case of emergency Mr. Wilson chose Daniel Willard, president of the Baltimore & Ohio Railroad. He chose wisely. Of the dominant quality of Mr. Willard's Americanism as well as of his great railroad ability and executive fitness for so important a post there can be no question.

Within seven days after he had accepted this billet, Willard was at work for the government. He bespoke for it at once the interest and cooperation of the heads of the other great railroads of America. He knew that in any national crisis the interest and the patriotism of these men was never to be doubted. And so he sought their cooperation and not in vain. A full dozen of the biggest railroad executives in the United States closed their desks and at Willard's suggestion came hurrying to Washington. When their conference was done, a definite plan for the service of the railroads in

a time of great national stress had been begun—a program which the railroad executives then returned to study in detail. At the conference they were told of the great defense and offense plans of the War College for the part which the railroad must play in a national emergency. Some of the railroad presidents learned for the first time the designated mobilization centers all the way across the land, the equipment necessary for each, the movement and direction of troop and munition trains, from every one of them.

It is gratifying to know that these railroad executives already are giving much time and thought to the use of our railroads in national defense. So is Major Charles Hine, who, like Herman Haupt, came out of West Point, perfected himself in military training and organization and gave his time after leaving the army to railroad training and organization. Hine started as a brakeman on the Erie Railroad, in order that he might study railroad operation from the bottom up—that he might eventually bring to the railroad some of the really good points of the army. He has since held high executive positions in many of the great railroad systems of the land—studying the problems of each until he knows the railroad map of this country as you and I know the fingers of our hands. The value of such a man to America in an emergency is not to be figured in dollars and cents.

But to my own mind, the value of such a military reserve corps among the railroaders will be comparatively slight if its membership be confined merely to railroad executives. The qualities of patriotism and

good Americanism are by no means confined to the higher-paid railroad men. Take a purely supposititious case—yet an entirely typical one:

Down in the offices of the old Cumberland Valley Railroad at Chambersburg, we will say, there is a boy who is assistant trainmaster or assistant superintendent. He is a smart boy, who has climbed rapidly in railroad ranks because of his abilities. He reads the papers. He is keenly interested in this whole idea of national defense. He reads the newspapers and the magazines and he wonders what his own part would be if Washington were taken by an enemy invader. Being a good railroader he does not have to spend much time in doubts. He knows that his little railroad—ever an important cross-country traffic link from Harrisburg down to Martinsburg and Winchester, will suddenly become part of the military base line north and south along the Atlantic coast. Over its stout rails will come the tidal overflow that ordinarily moves over the four busy tracks of the two railroad systems between Baltimore and Philadelphia. That means that his railroad, his own division, himself, if you please, will be called upon to handle a great traffic from Harrisburg south to the upreached arms of the Norfolk and Western and the Baltimore and Ohio lines.

That young man in the Chambersburg railroad office should be under a course of instruction today, as to the emergency use of his railroad, his division. The division is the operating unit of the railroad in America. Therefore a scheme for the military use of the railroad

should begin with its head, the superintendent. In the superintendent's office of every railroad division that may have possible military value, there should be a member of the army reserve corps, making the plan for the possible military use of his division. In the general superintendent's office there should be another reserve officer studying the schemes of the several divisions that center there. Similarly the process should be repeated in the general manager's and the president's offices, where authority converges still further. This is important work, vital training, if you please. It is hardly the sort of detail work to be placed upon the shoulders of a railroad executive, already burdened with a vast amount of other detail.

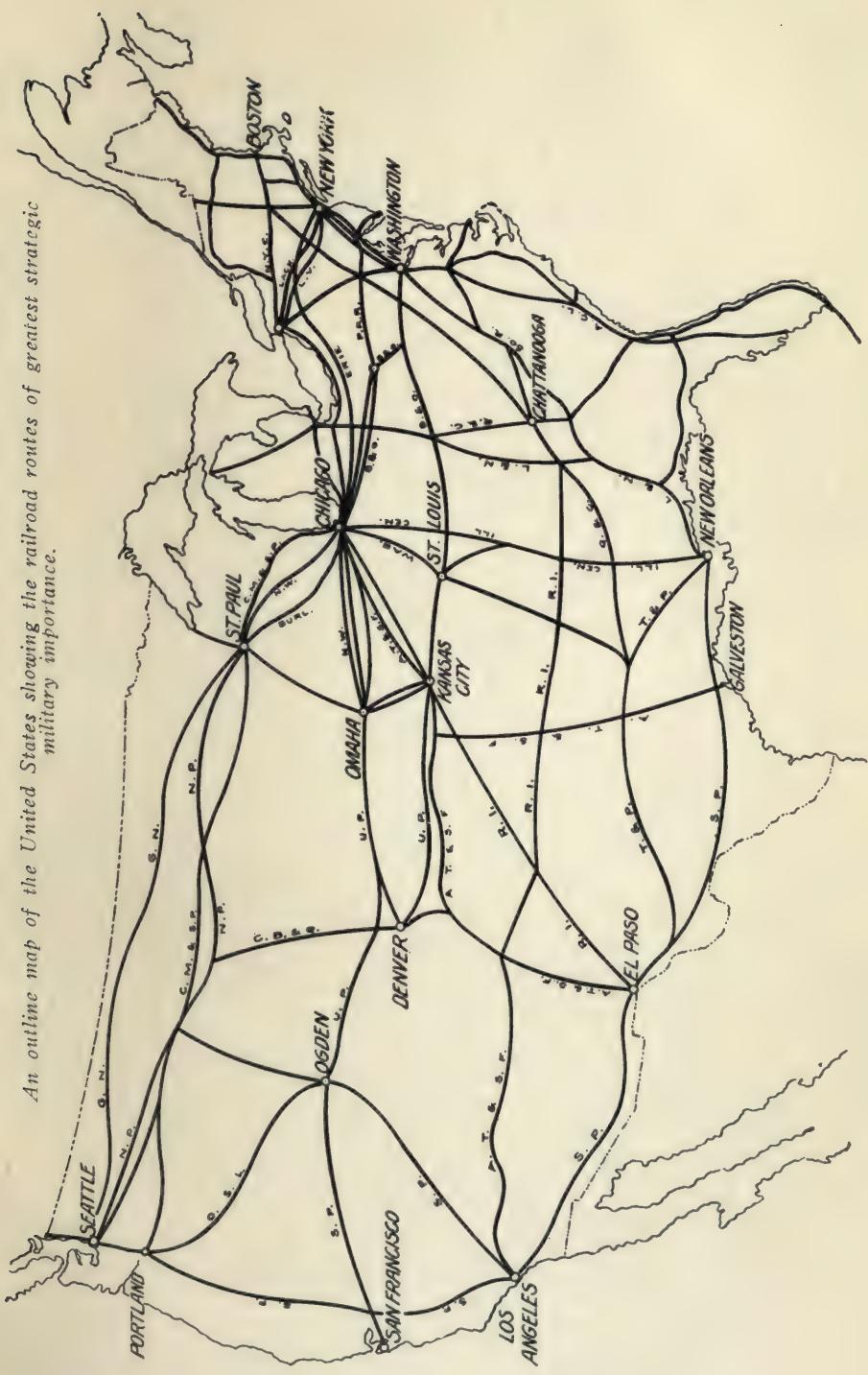
The best army training is that which simulates, as far as possible, the actual conditions that might arise in the case of real war. That is why the maneuvers that were held in the East at various times during the past decade have been of tremendous value. They should be repeated and the railroads should be asked to play their part at a moment's notice. To play that part well at so short a notice means planning in advance. The New Haven railroad recently, on the occasion of the Harvard-Yale game and the inauguration of Yale Bowl, brought sixty-five trains carrying 33,409 passengers into New Haven between 9:26 A.M. and 2:00 P.M.—the record passenger movement in the history of American railroading. Not one of those trains was late, not even to the fraction of a minute. In the very first hour of the afternoon, 22 trains, 221

passenger coaches all told, arrived at an interval of slightly over two minutes—226 passengers to the minute. And the detraining and entraining of these passengers was accomplished with military precision.

But the New Haven's remarkable performance was the result of planning—planning to the last detail. No wonder that John A. Droege, its general superintendent, is qualified to speak of the military possibilities of the railroad. But Droege knows that advance plans are of vital necessity. Of course, our railroads have met difficult situations when it has become absolutely necessary. The Ohio floods of three years ago proved their ability to meet a great emergency in a great manner. In a few hours many miles of their tracks were completely washed away, hundreds of bridges destroyed, their lines thrown into apparently hopeless confusion. Yet the railroaders never lost their heads. They arranged to reroute their through trains. Then and there it was that the Lake Shore railroad—running from Buffalo to Chicago—showed its resources. For it took upon its broad shoulders the trains from all these completely blocked lines—the Pennsylvania, the Baltimore and Ohio, and the Erie—and for long days tripled its ordinary traffic without apparently feeling the great overload.

Yet this traffic was in some sense routine and it was moving over one of the most generously equipped railroads in America. The military plan, as we have already seen, may have to make large strategic use of railroad lines of comparatively unimportant strength. It is here that the definite plan—from the superin-

An outline map of the United States showing the railroad routes of greatest strategic military importance.



tendent's office upward—counts. It is gratifying to know that the military bill provides an opportunity for the construction of such a plan, gratifying to know that the War College at Washington has succeeded in its detailed study of the use of our railroads in time of war.

It is upon such a study that Mr. Willard was enabled to give the railroad presidents whom he summoned to the Federal Capital such a lucid statement of the parts that each of them and their railroads would be expected to fulfill. Further than this, they are yet to evolve recommendations for terminal yards and double trackings which in an emergency would probably prove of tremendous military value but for which there is no commercial justification whatsoever. It is expected that the United States government will pay for construction work of this sort. It is entirely fit that it should. There hardly can be two sides to this question. The only question comes as to how rapidly these needed improvements can be made, particularly the emergency terminals. It will be unfortunate, to say the least, to attempt to move an army of any real size into a seaport important in a military or naval sense, but inadequately equipped with terminal sidings. It takes, roughly speaking, one mile of railroad train to handle one thousand troops and their accoutrements. To bring an army of fifty thousand men—a very moderate army, indeed—into a smaller city would require the prompt handling and unloading of fifty miles of train. These are the military railroad necessities which must be planned and built by the Federal government—without delay.

All these things are going to cost time and thought—and money. And it is because of this last factor that I have placed this entire question of the military development of our railroads at the end of opportunity and at the beginning of necessity—the immediate needs of the railroad, which we are now going to consider.

CHAPTER XII

THE NECESSITY OF THE RAILROAD

IN the entire history of the railroads they have never witnessed an outpouring of freight traffic such as came to their rails this winter and last, and congested their yards and lines in every direction. In addition to the high tide of traffic arising from a return of general prosperity the tremendous rush of munitions of war, destined overseas to the Allies from the North Atlantic ports, found the greater part of the roads suffering from the results of a decade of lean years and improperly prepared to handle any press of business. The causes that led to this lack of preparation, I have reviewed. Because of them the railroads were not ready even for a normal volume of traffic, to say nothing of the flood tides that came upon them. It was not possible to remedy the neglect before the tides began. And upon these traffic tides there also came at the close of 1915, one of the hardest winters that the East has known in many a long year. Days and nights and even weeks, the great freight yards of metropolitan New York, of Philadelphia, of Baltimore, of Boston, of Buffalo, and of Pittsburgh were swept by wind and snow, while the mercury hovered around the zero mark.

The record of their operating departments against these fearful conditions is a record of which the Ameri-

can railroads long may be proud. Superintendents, trainmasters, general superintendents, and general managers moved into their biggest yards and lived there for weeks and months at a time—in private cars, bunk cars, and cabooses—right on the job. But the odds against them were overwhelming. It was not until the warm days of early summer that the congestion was relieved and the railroads able to lift the embargoes that, in self-defense, they had been forced to place upon the freight.

It is already known that the congested conditions are being repeated in the winter that ushers in 1917—probably in even worse measure. And the railroads even after a comparatively dull summer are not much better prepared physically to meet the situation. To have made themselves ready for any such flood tides of traffic as were visited upon them last winter would have meant the radical reconstruction of many great terminal and interchange yards as well as the building of cars and locomotives by the thousands—involving, as we now know, the expenditure of great sums of money. And this seemed out of possibility, although the orders for new rolling stock in the first ten months of 1916 exceeded the entire orders for 1915. You must remember that it is one thing to order rolling stock in these piping times of prosperity—quite another thing to obtain it from manufacturers far behind their orders and greatly hampered by shortages of fuel, of labor, and of raw material. Here once again the railroads are greatly hampered by their lack of fresh capital.

A little while ago—until the unprecedented floods of traffic began to descend upon them—the railroaders, big and little, all the way across the land saw their only relief in a granting of further increases in their rates, both freight and passenger. Even today the best-informed of them will tell you that the necessity still exists—must sooner or later be met—when the war tides have ceased and business in America returns to its normal levels once again. For while traffic may return to normal levels, the prices of both the railroad's raw material and its labor will not descend so rapidly, if, indeed, they descend at all.

Before the great wave of war prosperity came upon us, the railroaders were showing their pressing need of immediate relief in the form of rate increases and were making a very good case for their necessities. They showed with unimpeachable exactness the steadily mounting cost of labor and of materials. Instance after instance they showed where the many regulating bodies had aided and abetted in raising costs of operation but had not granted any income increases with which to meet these costs. No matter how much the Federal board and the various state boards might conflict in other matters, they always have seemed to be in general and complete harmony as to laying increased burdens upon the back of the carriers. Under the whip of labor, Congress passed the sixteen-hour measure, a good bill for the railroaders but mighty expensive to the roads. The Full-Crew Bill, as we shall soon see, swept across the various states like a windborne conflagration across an open prairie. And after these

the Eight-Hour Day! And all this while many of the states were also passing bills reducing the price of passenger transportation to two cents a mile. A most unfair type of bill this, considered from any reasonable angle. For if it were profitable to carry a passenger at this figure—which I very much doubt—this type of measure still would remain arbitrary, unscientific, illogical—reasons which, of themselves, should utterly condemn it. Yet here is a sort of railroad bill to which state legislatures are most prone—of which very much more in a moment.

It was hopeless to expect this sort of a legislature to increase railroad rates—any more than the state regulating boards, which are the creatures of the various legislatures. The Federal commission down at Washington, did far better. With its usual breadth of judgment, it did not refuse to grant relief. After a careful survey by it of the entire subject, interstate freight rates were increased slightly; passenger rates much more generously. In fact it was the first time in years that many of the passenger fares had been given any very general increase. An old adage—which had become almost a fetish in the minds of the railroaders—was that the passenger rates were absolutely sacred; that any increases in the incomes of the roads must be borne by the freight. Increases in passenger tariffs probably would be greeted by roars of protest from the public, rioting was not out of the possibility.¹

¹ "When railroads were started in England, they were influenced by stage coach precedents. They put the engineer behind the iron horse

As a matter of fact the interstate passenger rates were raised, and there was hardly a protest on the part of the public. The railroaders who had clung superstitiously to their fetish had overlooked one big bet—the American public will pay for service. For super-service it will pay most generously.

Perhaps you do not believe this?

If so, consider this: When you travel you probably pick out the newest and the finest hotels in the towns you visit; you are considerably provoked if they do not give you a room with private bath each time. You scorn the old-time omnibus from the station—nothing but a taxi will do for you. And when it comes to picking trains

and called him a driver, they called the railroad car a coach or a van. They imitated the class distinction of the four-in-hand, and then charged by the mile. Coach travel cost by the mile. There were no terminal charges, no road upkeep charges. It was a piece rate proposition, a price per mile proposition as to revenues. The great difference between horse coaches and railroads was overlooked. Probably 90 per cent of stage coach expenses, whether of capital investment or operation, lies in the coaches, horses and harness. Even in the modern railroad, in the United States, only 20 per cent of the capital and 20 per cent of the operating expense are in the moving trains. Classified passenger and classified freight rates based on distance are founded on one-fifth of the real cost. This is not all. The cost of the other four-fifths has been increasing steadily from the start. Yard expenses are increasing far more rapidly than road expenses. The cost of terminals is growing with the square of the population. What is more serious, both will continue to rise. Getting so much for nothing, both passengers and shippers congregate in the big cities, and add still further to the congestion, to the increased cost of the part of railroading.

“Every railroad man, every banker, every investor, every student of transportation knows that rates should be increased because the roads can no longer stand the drain of deferred obsolescence, or unremunerative investments, especially in terminals.

“Rates ought to be based on four elements and probably a fifth

Do you know what are the most popular trains in America today? The most expensive. The most popular and crowded trains between New York and Chicago today are the twenty-hour overnight flyers which, for their superior accommodations and their shortened running time, charge eight dollars excess over the regular fare. Night after night these trains run in two, sometimes in three and even four sections, while the differential lines—so called because of their slightly inferior running time and accommodations—almost starve to death for lack of through traffic. The same thing is true between New York and Boston, where the excess-fare trains are the most popular and hence the most crowded. The rule seems to hold good wherever excess-fare trains are operated.

added. The four basic elements are. (1) Cost of collecting the traffic; (2) Cost of transporting the traffic; (3) Cost of insurance or classification; (4) Cost of delivering the traffic.

“Only (2) and (3) now enter into rates. It is as cheap to arrive at New York at the Pennsylvania, or New York Central Station, as to drop the train in Newark or Tarrytown. It is as cheap to ship freight to a New York dock as to unload it from the car at a country siding.

“In the New York Subway the cost of (1), (3) and (4) sinks to a vanishing point, and nothing is left but the flat cost of running trains and a flat revenue per passenger.

“In steam railroads operation costs of both (1) and (2) are very great, but not made up by revenue. The fifth element that ought to govern charges is a principle that even frogs know all about, but which human beings operating railroads have not yet learned, namely, to put on flat and expand when prices are high so as to accumulate a surplus to tide over the lean years. This fifth element is really included in (3) classification. Railroads now have different rates for different commodities, but \$1.80 a bushel wheat and \$0.20 cotton are not the same as \$0.50 wheat and \$0.05 cotton. The wheat raised and the cotton grown, and the iron made into pig iron at \$30.00 a ton can afford to pay rates that vary with the price.

“Piece rates applied to traffic is the tuberculosis that is gradually but surely consuming our railroads.” — Harrington Emerson.

There is a great deal of hard sense to prompt the operation of these excess-fare trains. For instance, take two men—one rich, one poor—and imagine them going, say from Boston to San Francisco. They make several stops on the trip. The rich man, after the way of his kind, tarries in the fine hotels of two or three cities along the route. He pays five dollars a day for his rooms in these taverns, and from two to four dollars apiece for each of his meals. The poor man stops in those same cities. He pays from fifty cents to a dollar for his lodging each night and his meals will cost him nearer twenty-five than seventy-five cents each. Each of these men suits the necessities of his pocketbook and each finds suitable accommodations at the prices he wishes to pay.

Yet the rich man and the poor man pay practically the same long-distance through fare—a trifle over two cents a mile—for the journey. Of course the rich man may have his drawing-room in a smart train that is formed almost exclusively of Pullman cars and the poor man may ride in day coaches and free reclining chair cars all the way; but the railroad's revenue is practically the same from each of them.

Here, then, is the rub!

Rich man, poor man, beggar man, thief—until comparatively recently, and then in only a few cases, have they represented any difference in the railroad's income account. For our railroads, with a few exceptions, long ago bartered away one of the large functions of their passenger business. I am referring to the building and operation of the sleeping and the parlor cars

—a business carried forth today almost exclusively by the Pullman Company. Great reticence is shown by the railroads in speaking of their contracts with the Pullman Company, yet it is generally known that, save in a few notable cases, that company pockets the entire seat-and-berth revenue of its cars. The railroad derives no income from hauling them. And it is not so long ago that most of our railroads paid the Pullman Company an additional toll of from three to five cents a mile for hauling each of its cars over their rails.

It is hardly fair to scold the Pullman corporation for having driven a shrewd bargain years ago, when it was far-sighted, with a generation of railroaders, now almost past and gone, who were very near-sighted about the steadily growing taste of Americans for luxury in travel. It is only fair, in addition, to state that it has been generally progressive in the maintenance of its service and equipment; it has been in the front rank in the substitution of the steel car—which the modern traveler demands and which has been a definite factor in creating the definite plight of our great sick man today—for the wooden coach.

If the Pullman Company has moved slowly in the retirement of the barbaric scheme of upper and lower berths giving into a common center aisle, that is not to be charged against it either. This is not the time nor the place to discuss these cars in detail. But it is pertinent to make a brief comparison of them and the compartment cars of England and the Continent.

"Are you willing to pay the price for them—all of you travelers, I mean?" says the big railroad traffic-man blandly when you go to him about the matter. "It costs you almost twice as much for a stateroom from Paris to Marseilles as from New York to Buffalo—two journeys of approximately the same length. Are you willing to stand for an increase in railroad rates instead of paying the European charges for sleeping-car staterooms?"

You say, quite frankly, that you do not object to paying six dollars for a compartment from New York to Buffalo, or even seven dollars for the slightly more luxurious drawing-room—a feature, by the way, which is existent in practically every Pullman sleeping car and ready for the use of the exquisite traveler. You recall that it was not so many years ago that the railroads themselves answered this very question—by demanding that there be at least one and one-half standard passage money presented for the use of a compartment; two full fares for the use of a drawing-room. Up to that time those few roads that were progressive enough to use solid compartment cars in regular service paid for their generosity. There are but nine compartments or drawing-rooms in the standard Pullman all-compartment car. And if it happened, as frequently it did happen, that these compartments were all occupied singly, the railroad derived but nine passenger fares for hauling one of the very heaviest types of coaches. A day coach of similar weight would carry from 80 to 100 passengers. The new ruling, however, has helped to equalize the situation.

To return to the excess-fare trains. It now looks as if they were the only way through for a majority of the trunk-line railroads. Gradually railroad heads have been warming to them; and the rush of traffic to their cars has been almost as astonishing as the lack of protest to accompany the sturdy raises in interstate passenger fares.

It is a little more than twenty years ago that the fast-running Empire State Express was placed in service between New York and Buffalo. It was a railroad sensation. The fastest mile ever made by a locomotive, to which we referred when we were speaking of the men in the engine cab, was made on a fall day in 1893, by the Empire State speeding west from Rochester. The train in that day, and for a long time afterward, was composed of day-coaches—save for a single parlor-car; and barring passes, about every form of railroad transportation was accepted upon it, without excess charge. It quickly became the most patronized railroad train in the world and a tremendous advertisement for the New York Central, which operated it.

Yet this tremendously historic and popular train is regarded by the expert railroaders of today as a mistake. It is a mistake that probably would not be repeated today. If the Empire State was to be added to the time card tomorrow, it would, in all probability, be an excess-fare train—a little bit more luxurious perhaps, but certainly more expensive. And travelers would continue to flock to it as they do to those staunch extra-fare trains between New York and Boston—

the Knickerbocker, the Bay State, and the Merchants' Limited.

The railroads of the West were, for a long time, seemingly barred from establishing "excess-speed-for-excess-fare" trains by physical limitations which seemed to make long-distance high-speed trains impracticable. For you must remember that in the case of the New York-Chicago excess-fare trains the extra charge is based exactly on shortened time. For each hour saved from the fixed minimum of twenty-eight hours for standard lines between the two cities one dollar is added to the standard fare. So it is that the Twentieth Century Limited and its counterpart on the Pennsylvania, each making the run in twenty hours, add eight dollars to the regular fare of \$21.10. But, if these trains are delayed—for any cause whatsoever—they will pay back one dollar for each hour of the delay, until the standard minimum fare is again reached.

Yet the western railroads have taken hold of the situation with a bold hand.

"We shall put a winter train from Chicago to Los Angeles and San Francisco that will be *de luxe* in every sense of the word," said the Santa Fé four or five winters ago. "We shall have the very best of train comforts—library, barber shop, ladies' maids, compartments a-plenty—and we shall charge twenty-five dollars excess fare for the use of this train."

Railroad men around Chicago received this news with astonishment.

"You don't mean to say," they gasped, "that you

are going to guarantee to cut twenty-five hours off the running time between Chicago and the Pacific coast?"

"We are going to run the new train through in five hours less time than our fastest train today."

"Five dollars an hour! That's going some!" whistled railroad Chicago.

"Five dollars an hour—nothing!" replied the Santa Fé. "We are going to charge for luxury—not for speed. We are going to charge folks eighty-five dollars for the ride between Chicago and San Francisco instead of the standard price of sixty dollars; and we are going to have them standing in line for the privilege of doing it! They will come home and boast of having ridden on that train just as folks come home from across the Atlantic and boast of the great hotels that have housed them in Europe. You never hear a man brag of having ridden in a tourist-sleeper."

The Santa Fé was right. It gauged human nature successfully. Its *de luxe* train at twenty-five dollars excess fare has become a weekly feature between Chicago and the Pacific coast the entire winter long. Its chief rival has also installed an excess-fare train—in connection with its feeding lines, the North Western and the Southern Pacific. This train runs daily the year round and so charges but ten dollars excess fare between Chicago and San Francisco. But in the case of neither of these trains do they refund fare-excess in case of delay. They feel that the two big passenger roads of the East made a distinct mistake when they established that basic principle.

Truth to tell, America these days is bathed in luxury.

America stands ready to pay the price; but America demands the service.¹ And the lesson of the excess-fare trains is one that the railroader who thinks as he reads may well take to heart. Some of them are giving it consideration already. One big road has had for some time past under advisement a scheme by which it would make a ticket charge of one-half cent a mile extra for those of its passengers who chose to ride in sleeping or parlor cars. In this way it would compensate itself for the lack of any portion of the Pullman Company's direct revenue.

A certain big railroader out in the Middle West has very determined opinions in regard to the possibility of the passenger end of the railroad receipts being increased. Like many of the big operating men he affects a small regard for the passenger service. And this despite the fact that if you touch the average rail-

¹ As an evidence of the fact that the sick man of American business has by no means lost his ability to render service, consider what might have seemed to travelers a minor detail of ordinary service, and yet was in reality a tremendous task. On a certain snowy morning in January, 1917, traffic into New York was unusually heavy. The great automobile show was just opening, folk were flocking to it from all corners of the country. The facilities of even as great a railroad as the New York Central were severely taxed. Its Twentieth Century Limited was in three sections, the Detroiter in two, Train Six in three. On these and two other trains due into the Grand Central Station between 8 and 9:40 a. m., 1,200 persons were served with breakfast. This breakfast required sixteen dining-cars, eighty-two stewards, cooks, and assistants, and 105 waiters. Advance advice was received of the requirements, the cars assembled, the crews brought together, and everything made ready to attach the cars to the train at Albany in the early morning. And this was all in addition to the regular dining-car service of the road.

roader, big or little, upon his tenderest spot, his pride in his property, he will talk to you in glowing terms of the "Limited," the road's biggest and fastest show train—showy from the barber shop and the bath in her buffet car, to the big brass-railed observation platform at the rear. He will not talk to you at length of his freight trains, but he will prate unceasingly of Nineteen's "record"—how she ran ninety-eight per cent on time last month, a good showing for a train scheduled to make her thousand miles or so well inside of twenty-four hours.

This big railroader of the Middle West does not, however, take your time in mere boasting of his operating record. He comes to cases, and comes quickly—to the question of increased passenger rates when our present flood tide of traffic has descended to the normal.

"See here," he tells you when you are seated in his big, comfortable office, "here are the figures. They speak for themselves. Take New York, for instance. There were 120,750 commuters entering and leaving that big town each business day last year. With an average ride of fourteen miles for each commuter, we have a total passenger mileage of 1,014,300,000 miles in that metropolitan district. The passenger traffic from New York westward to Chicago and beyond in the same time was 234,482 passengers. Multiply these by the average rail distance between the two cities, 960 miles, and you have another 225,083,520 passenger-miles. Now to this add 163,620 commercial travelers, each riding an estimated average of fifty miles a

day—2,454,300,000 miles for these—and you have a total of 3,693,683,520 miles—or approximately ten and a half per cent of the passenger miles on our steam railroads last year. This ten and a half per cent of the passenger travel was participated in by 518,832 persons—a little bit more than one-half of one per cent of the total population of the country. If this rule holds good it follows that five and three-tenths per cent of the population of the United States, or 5,194,000, received in an average year all the benefits of the passenger-carrying establishment of the railroads.

"The average journey upon our railroads last year was thirty-four miles; therefore, a round trip between New York and Chicago represented twenty-eight average trips; a round trip between New York and San Francisco ninety-two average trips. We can agree that the bulk of the passenger travel consists of commuters, commercial travelers, men on business trips, and persons traveling for pleasure; in proportion about in the order I have given them. If these figures show anything, they show that the great bulk of our passenger mileage is used by a class which we may call constant travelers. I believe that it is a reasonably safe assumption that at least four-fifths of the 35,000,000,000 passenger-miles made last year were used by this class of travel, probably representing less than 10,000,000 of the population of the country. This same 35,000,000,000 of passenger-miles distributed equally among our entire population produces 357 passenger-miles per individual.

"It is a simple matter for the artisan, the farmer,

or the man in the street, without *Wanderlust* in his blood, to figure out for himself that if he and each member of his family do not travel their 357 miles in a single year then he is helping to pay for the passenger service of the railroads in the form of increased freight charges.

"I myself have always maintained that the passenger revenues of our railroads do not render their proportion of the cost of operation. The Interstate Commerce Commission has upheld the same contention, as anyone can see by its recent decision granting increases in passenger rates proportionately much higher than the increases in freight rates. These figures of mine show how a privileged class, representing ten per cent, or, at the widest calculation, not more than twenty per cent of the population, have been receiving transportation at far less than the actual cost; while the remaining ninety per cent of the citizens of the United States have paid the freight—literally."

The railroader's figures are interesting—to say the least. And we must assume that he has not forgotten the fact that there is one great economic difference between the freight and the passenger traffic. The one must move, and, save in the few cases where water-borne traffic competes, move by rail; a large part of the other is shy and must be induced. If this were not true the big railroads would be advertising for freight business as steadily and as strongly as they advertise for passengers. Of course a large proportion of folk travel because necessity so compels, yet there is a goodly proportion, a proportion to be translated into many

thousands of dollars, who travel upon the railroad because the price is low enough to appeal to their bargain-sense. In this great class must always be included the excursionists of every class. These folk must be lured by attractive rates. And as a class they are particularly susceptible just now to the charms of the railroad's great new competitor—the automobile.

It was only two or three years ago that the round-trip ticket at considerably less than the cost of two single-trip tickets and the twenty-dollar mileage book, entitling the bearer to 1,000 miles of transportation, prevailed in the eastern and more closely populated portion of the United States. The price of the mileage book was raised to \$22.50. Within a short time it is likely to go to \$25. And there are shrewd traffic men among the railroad executives of the country who today say that within twenty years it will cost five cents a mile to ride upon the railroad—as against an average fare of two and a half cents today. And I do not think that, in view of the advances in cost—as well as that great necessity in making good that loss in both physical and human equipment, to which I have already referred—the public will make any large protest. The average man does not wish to ride upon a railroad that is neglecting either its property or its employees. He is willing to pay a larger price for his transportation if only he is assured that this larger price is going to make his travel more safe and more comfortable in every way.

Therefore I do not think that it is going to be very hard for the railroads to gain necessary advances in

fares—particularly if they will not forget one big thing. The success of the Twentieth Century Limited and the other trains of its class ought not to be lost upon the railroader. With service he can trade for increased rates. There are many large opportunities for the railroad along these lines, in both freight and passenger service. A progressive desire to enter into these opportunities will probably bring the railroad many of the advances that it so sorely needs. And I am not sure but that such a spirit would also do much toward securing for it the very necessary unification of regulation—not alone of its income but also of its outgo—that it so earnestly seeks at the present time.

CHAPTER XIII

REGULATION

AT the time that these lines are being written the railroads of the United States are entering a veritable no man's land. The ponderous Newlands committee of Congress has begun its hearing and accomplished little; so little that it has asked and received an extension of time of nearly eleven months in which to go into the entire question more thoroughly. We all hope it does. The Adamson bill, establishing the so-called eight-hour day for certain favored classes of railroad employees, is statute, but its constitutionality is yet to be established. And the railroads are preparing to fight it, in its present form, and to the bitter end. General sympathy seems to be with them; it is quite probable that even the four brotherhoods that fought for the measure—unlike the Pears Soap boy—are not quite happy now that they have received it.

In the midst of all this confusion President Wilson, assured of a second term of office and so of a reasonable opportunity to try to put a concrete plan into effect, has emerged with his definite program, not radically different from that which he evolved last August at the time of the biggest of all crises between the railroads and their labor, but which was warped and disfigured until its own father might not know it. His plan, as now is generally known, provides not alone for

the eight-hour day for all classes of railroad employees, but includes the most important feature of compulsory arbitration referred to in an earlier chapter.¹

It now looks as if the United States was upon the threshold of the eight-hour day—in many, many forms of its industrial life. I believe that, in his heart, the average railroader—executive or employee—favors it, fairly and honestly and efficiently applied. It has been charged as the first large step forward toward the government operation of our railroads, yet I cannot see it as nearly as large a step as the extension of the maximum weight of packages entrusted to the parcel post, a system which if further extended—and apparently both legally and logically extended—might enable a man to go up to Scranton and place enough postage stamps upon the sides of a carload of coal to send it to his factory siding at tidewater. Compared with this the eight-hour day is as nothing as a step toward government operation or ownership. A genuine eight-hour day is, of course, a long step toward the nationalization of our railroads—quite a different matter, if you please.

President Wilson's entire plan, as it has already been briefly outlined, forms a very definite step toward such nationalization. It at once supersedes the indefinite quality of the Newlands committee hearings—no more indefinite at that than the average hearing of a legislative committee. When the Wilson plan has been

¹ And now Congress has adjourned without passing the supplementary feature of the Adamson bill—the all important requirement of arbitration in labor disputes.

adopted, fully and squarely and honestly, either by this Congress or by the next, it will then be the order of the day to take up some of the next steps, not so much, perhaps, toward the nationalization of our railroads as toward the further bettering of their efficiency and their broadening to take advantage of some of their great latent opportunities as carriers of men and of goods.

The men who control our railroads today look forward to such a definite program with hope, but not without some misgivings. For, after all, we are by no means nationally efficient, and there seems to be a wide gulf between the making of our economic plans and their execution. No wonder, then, that the railroads are dubious. They are uncertain. They have been advised and threatened and legislated and regulated until they are in a sea of confusion, with apparently no port ahead. The extent of the confusion is indicated not alone by their failure to handle the traffic that has come pouring in upon them in the last days of the most active industrial period that America ever has known, but by the failure of their securities to appeal to the average investor—a statement which is easily corroborated by a study of recent Wall Street reports. And what would be a bad enough situation at the best has been, of course, vastly complicated by the labor situation.

We already have reviewed some of the salient features of that situation; we have seen, of organized labor, the engineer and the conductor at work; and

of unorganized labor, the section-boss and the station agent. We have seen the equality of their work and the inequality of their wage. It is futile now to attempt to discuss what might have happened if the pay envelopes of all these four typical classes of railroad employees had been kept nearer parity. As a matter of fact the disagreeable and threatening situation between the railroads and the employees of their four brotherhoods is largely of their own making. If, in the past, the railroads had done either one of two things there probably would be no strike threats today, no Adamson legislation, no president of the United States placed even temporarily in an embarrassing and somewhat humiliating position. The railroads, in the succession of "crises," as we have already studied them, must have foreseen the inevitable coming of the present situation. They could have fought a strike—and perhaps won it—at any time better in the past than at the present. The brotherhoods have gained strength and the efficiency of unison more rapidly than the railroads. And even if the railroads at some time in the past had fought the issue and lost it, they at least would have had the satisfaction of having fought a good fight and an honest one. Institutions are builded quite as frequently on defeats as upon successes.

Or the railroads might have sedulously recognized the nonunion worker in their ranks and by a careful devotion to his position and his pay envelope kept his progress equal to that of his unionized brother. True, that would have cost more in the first place, but it now looks as if the railroad would have to pay the

amount in the last place—and the accrued interest is going to be sizable.

It is not yet too late to do this last thing; it is a principle for which the railroaders should fight, into the last ditch. The greatest of the many fundamental weaknesses of the Adamson bill is the bland way in which it ignores this principle—the way in which, as we already have seen, it singles out the four great brotherhoods for the generous protection of the so-called "eight-hour day," and leaves all the other railroad workers out in the cold. Or is it a method of proselyting by which the four brotherhoods hope to force the other branches of railroad workers into organization?

It is not too late for the men who control our railroads to offset such brutal forms of proselyting by raising the status of their unorganized labor—voluntarily and in advance of possible legislation, if you please; with a generosity of heart that cannot fail to make a warm appeal to public sentiment. It is not too late for our railroads, on their own part, to consider labor from as scientific and as modern a viewpoint as they do their physical and financial problems. It is not too late for them to raise up high executives who shall make labor, its emoluments and its privileges, its possibilities of evolution their whole study. In an earlier chapter of this book we discussed this matter in detail; called attention to the lack of new blood of the right sort coming to the ranks of the railroad, to the opportunity of fixing wages upon a purely scientific as well as a cost-of-living basis; suggested even the broad

possibilities of the bonus system as well as the abandonment of the complicated double basis of payment to trainmen which has crept into effect.

Upon these foundations the pay envelopes of the railroad worker in the future must be figured. If the railroads themselves are incapable of so establishing it—and in full fairness to them it must be stated that the time may have passed when they were capable of accomplishing this, unaided at least—then the national government must step in and do it. The Interstate Commerce Commission may be asked to establish, with compulsory arbitration, not only a minimum but a maximum rate which the railroad may pay its various classes of employees—and so still another great step will be taken in the nationalization of our system of transportation. Call it socialism, if you like; I do not, but I do feel that it is another large step toward nationalization.

Moreover, the very consideration of the topic brings us at once to the greatest immediate necessity of the railroad—unified regulation.

Unified regulation is the crux of the railroad situation today, from the railroad executive's, the investor's, and the patron's point of view. Your wiser executive is holding the question of increased rates in abeyance for the moment. He is devoting his best thought and his best energy toward simplifying and bettering railroad control. He has a frank, honest motive in so doing. Not only will he build toward permanence of the great national institution with which he is connected

but he will begin also to induce Capital—the wherewithal with which to build up properties and pay-rolls and possibilities—to come once again toward the bedside of the sick man.

Capital is a sensitive creature. Conservative is far too mild a word to apply to it. Capital takes few chances. And the steady and continued talk of the plight of the railroad has driven Capital away from the bedside of the sick man. Yet Capital, if unwilling to take chances, rarely overlooks Opportunity. And if Capital be convinced that Opportunity is really beckoning to the Railroad, that fair treatment is to be accorded to the patient at last, he will return there himself and place his golden purse in the sick man's hand. Only the wary Capital will demand assurances—he will demand that the Railroad's two nurses, Labor and Regulation, be asked to mend their manners and that that fine old physician, Public Sentiment, be called to the bedside.

Let us cease speaking in parables, and come to the point:

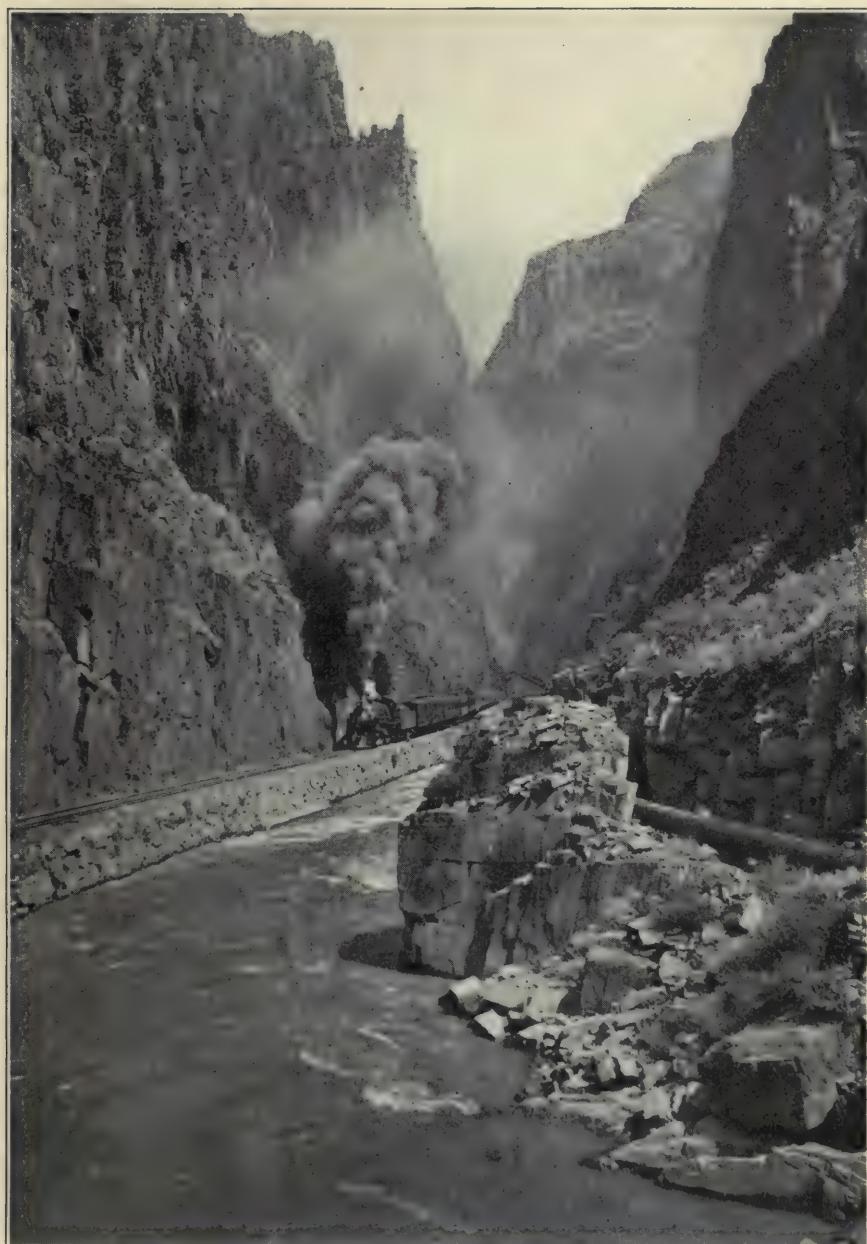
Railroad regulation today is, of course, an established factor in the economic existence of this nation. Already it is all but fundamental. It came as a necessity at the end of the constructive and destructive period of American railroading. I connote these two adjectives advisedly, for while the railroad in a physically constructive sense was being built it also was doing its very best to destroy its competitors. It had hardly attained to any considerable size before the natural processes of economic evolution began to assert them-

selves. Certain roads, stronger than others, still stronger grew. And as they stronger grew, the sense of power, the economic value of power, came home the more clearly to them. To gain power meant, first of all, the crushing of their opponents, if not by one means then by another.

This is not the time or place to discuss the great evils that arose from the unbridled savagery of cut-throat competition in the seventies, the eighties, and the early nineties. The whole rotten record of rebates, of sinister political advantages gained through bribery of one form or another, has long since been bared. The illegitimate use of the railroad pass in itself makes a very picturesque chapter of this record.

Such a condition of affairs could not go forward indefinitely. In this day and age it is a wonder that it existed as long as it did exist. Out of this turmoil and seething chaos was born Railroad Regulation. She was a timid creature at first, gradually feeling her increasing strength, however, and not hesitating to use it. For a long time she had a dangerous enemy, a fellow who up to that time had allied himself almost invariably with railroads and railroaders—the practical politician. Eventually this fellow took upon himself the rôle of best friend to Railroad Regulation.

The effect of the railroad pass upon the dishonest newspapers was only a little less potent than upon the dishonest politician. Put in its kindest light it was a softening influence in the editorial sanctum. When it was gone a sterner spirit began to assert itself in a large portion of the press. The railroad was being called to



THE ROYAL GORGE, GRAND CANYON OF THE ARKANSAS,
COLORADO

The most remarkable chasm in the world traversed by a railroad.



account for its sins more sharply than ever before. And a smarting politician who went before a legislature with some measure striking hard at a railroad could be reasonably assured of a large measure of support from the Fourth Estate.

In the golden age of journalism both editors and reporters spent their vacations in delightful, but distant, points. It was a pretty poor sort of journalist who paid his fare when he wished to ride upon the cars. Generally his own office took care of his rather extensive and extravagant demands for travel. If, however, he happened to be employed upon one of the few honest newspapers who had conscientious scruples about accepting free transportation, either wholesale or retail, from the railroads, he generally had recourse to the local politicians. There were aldermen in New York, in Philadelphia, and in Chicago, undoubtedly politicians in numerous other cities, who carried whole pads of blank railroad passes in their pockets. It was only necessary for them to fill these out to have them good for immediate transportation. The effect of this transportation upon the political welfare of the railroads in city halls, in courthouses, in state capitols, even in the national capitol itself — can well be imagined.

There was another evidence of this golden stream of free transportation. It was having a notable effect upon the passenger revenues of the railroads, particularly in the relation of these revenues to the cost of operating the trains. It was no unusual thing for a popular evening train from some state metropolis up to its capital,

to be chiefly filled with deadheads. The railroads grew alarmed at the situation. It was beginning to overwhelm them. They looked for someone to help them out of it. They found that someone in Railroad Regulation—that spiritual young creature who had been brought into the world and clothed with honesty and idealism. Railroad Regulation came to their aid. Railroad Regulation abolished the pass—the illegitimate use of the pass, at any rate. Long before this time she had made rebating and bribery cardinal and unforgivable sins.

The effect upon the dishonest politician as well as the dishonest newspaper was pronounced. The reaction was instant. If this new creature, Railroad Regulation, possessed so vast a strength, the roads should be taught to feel it. They would be shown exactly where they stood. And so it was that viciousness, revenge, and a crafty knowledge of the inborn dislike of the average human mind to the overwhelming and widespread corporation seized upon Railroad Regulation.

Now the railroads were indeed to be regulated. The spiritual creature was given not one iron hand but eventually forty-six. In addition to the Interstate Commerce Commission down at Washington, each of forty-five separate states gradually created for themselves local railroad-regulating commissions. The efficiency of these boards was a variable quality—to say the least. But if each of them had been gifted with the wisdom of Solomon as well as with the honesty of Moses, the plan would not have worked, except to the great detriment of the welfare of the railroads. No

railroader today will deny that it has worked in just such detrimental fashion. He will tell you of instance after instance of the conflicts of authority between the various regulatory boards of the various states through which his property operates; of the still further instances where these conflict with the rulings and orders of the Federal board at Washington.

Railroaders have large faith in the Interstate Commerce Commission. They believe that is both fair and able, a great deal more able than most of the state regulatory boards. Yet even if all the state boards were as efficient as those of Massachusetts or Wisconsin—to make two shining examples—the system still would be a bad one. Today these state boards, in many cases under the influence, the guiding power, or the orders of erratic state legislatures, are imposing strange restrictions upon the railroads under their control. In sixteen states there are laws regulating the type of caboose a freight train must haul. Linen covers are required for head rests in the coaches in one commonwealth; in another they are forbidden as unsanitary. Oklahoma and Arkansas are neighbors, but their regulations in regard to the use of screens in the day coaches of their railroads are not at all neighborly. In one of them screens are required; in the other, absolutely forbidden. It, therefore, is hard work to get a train over the imaginary line which separates Arkansas and Oklahoma without fracturing the law. According to a man who has made a careful study of the entire subject, thirty-seven states have diverse laws regulating locomotive bells, thirty-five have laws about whistles

and thirty-two have headlight laws. The bells required range from twenty to thirty-five pounds and one state absolutely insists upon an automatic bell-ringing device. The five-hundred candle-power headlights that are good enough for Virginia may be used across the border in Kentucky, but not in North Carolina, which will not permit lights under fifteen-hundred candle-power. And South Carolina insists that the headlight shall be ten-thousand candle-power or a searchlight strong enough to discern a man at eight hundred feet. Nevada goes still further and says that the light must show objects at a distance of a thousand feet.

Even the lowly caboose, the "hack" of the freight-trainmen, has not escaped the attention of state legislators. While many states are quite content with the standard eighteen-foot caboose mounted on a single four-wheel truck, thirteen of them demand a minimum length of twenty-four feet—Missouri twenty-eight and Maine twenty-nine—while fifteen insist that there must be two of the four-wheel trucks. The legislators at eight commonwealths have solemnly decreed that caboose platforms be fixed at twenty-four inches in width, Illinois and Missouri require thirty inches, while Iowa and Nebraska are content with eighteen and with twenty inches respectively. A legislator's lot cannot be an entirely happy one when it comes to determining these details of railroad equipment. But then compare his lot with that of the man who must operate the railroad—who finds that one state compels the continuous ringing of the locomotive bell while a train

is passing through one of its towns; despite the fact that an adjoining state makes such an act a criminal offense. The life of a man who must operate a railroad over some seven or eight of these states is certainly cast upon no bed of roses.¹

Yet these are but the smaller troubles which await him. Take the question of the so-called "full-crew" law: Beginning only a very few years ago a wave of legislation swept over the country, compelling the railroads to increase the number of brakemen that they carried upon each of their trains. The carriers protested bitterly against the measure. They said that it was arbitrary, expensive, illogical, unnecessary. But it was indorsed by the labor organizations, and the politicians fell in line. Twenty-two states passed the law. Governors Foss of Massachusetts, Cruce of Oklahoma, and Harmon of Ohio vetoed it. So did Governor

¹ "Fifteen States have laws designed to secure preferential treatment for their freight by prescribing a minimum movement for freight cars. Several of these require a minimum movement of fifty miles a day, though the average daily movement throughout the nation is only twenty-six miles. One state imposes a penalty of ten dollars an hour for the forbidden delay. Though under the Federal law there is no demurrage penalty for failure to furnish cars to a shipper, several states have penalties running from one dollar to five dollars per car per day. The result is that the railroads are compelled to discriminate against Interstate Commerce and against commerce in the states that have no demurrage penalties.

"One by-product of all this chaotic regulation has been an increase in ten years of eighty-seven per cent in the number of general office clerks employed by the railroads, and an increase of nearly 120 per cent (over \$40,000,000) in the annual wages paid to them. During this period the gross earnings of the roads increased only fifty per cent. In the fiscal year of 1915 the railroads were compelled to furnish to the national and state commission and other bodies over two million separate reports." — Harold Kellock in *The Century Magazine*.

Hughes of New York. Later Governor Sulzer of New York signed it. It also became operative in Ohio. The people of Missouri, speaking through their referendum, threw it out. But in twenty states it became and remains statute—a greatly increased operating charge against the railroads which operate through them. The “full-crew” law in Pennsylvania, in New York, and in New Jersey costs the Pennsylvania Railroad an extra \$850,000 a year—five per cent, if you please, on \$17,000,000 worth of capital.

The “full-crew” legislation has been followed more recently by an attempt at legislation regulating the length of trains—freight trains in particular. Some of the men who engineered the first crusade have been responsible for the second. They have volunteered the suggestion that the railroads have sought to offset the effects of the “extra crew” by lengthening the trains. And they have countered by proposing statutes suggesting that all freight trains be limited to fifty cars, about half of the present maximum.

To the average man this will seem as logical as if the state were to step in and tell him how long he must take to reach his office in the morning or how long he must wear a single pair of shoes. To the railroader the injustice of the thing comes home even more sharply. For these ten years or more he has been working to increase the efficiency of his plant. He has believed that one of the straightest paths to this end has been in increasing the capacity of his trains—just as the carrying capacity of merchant ships has steadily been increased. He has made this possible by enlarging his

locomotives and his cars, by laying heavier rails, by rebuilding his bridges and by ironing out the curves and reducing the grades in his tracks, by multiplying the capacity of his yards and terminals—all at great cost. These things have made the 100-car, 5,000-ton capacity freight train not merely a possibility, but to his mind an economic necessity as well. And this despite the interesting opinion of Mr. Harrington Emerson which I have given in an earlier chapter.

Last winter, when the state of Illinois seriously considered the legislation limiting train-lengths, the president of one of its greatest railroads went down into the southern part of the state and said:

“Do you wish us to discard these strong new locomotives that we have been building? Do you wish us to return to the small engines of a quarter of a century ago? It would be inefficient, wasteful to use our modern locomotives for the short-length trains. And sooner or later you would have to bear the cost of the discarded equipment. State laws may be erratic. Economic laws never are. They are as fixed as the laws of nature or of science.”

And the state of Illinois took heed of what this man and his fellows said and killed the piece of ridiculous legislation. But it is by no means killed in some of the other states of the Union.

The conflicts between state authorities that we noticed already have borne directly upon the railroad's earnings. The conflicting intrastate rates have borne far more deeply and far more dangerously upon them.

Indiana long since fixed the demurrage penalty at one dollar a day for each car which a railroad failed to furnish a shipper; North Dakota made it two dollars; while Kansas and North Carolina fixed it at five dollars a day. Unscientific is hardly the word for such rate-making. And how shall one term Kansas' action, withholding passenger-fare legislation until she found whether or not the supreme court of Nebraska would permit the two-cent-a-mile bill of that state to stand?

If these rank discrepancies in the manhandling of rates by the various states affected only their own territories it would be quite bad enough. Unfortunately they play sad and constant havoc with the interstate rates.¹ These are delicate and builded, many times,

¹ Illinois a few years ago passed a statute limiting passenger fares within her boundaries to two cents a mile. To this, the Business Men's League of St. Louis filed a complaint with the Interstate Commerce Commission, stating that a discrimination had been created against St. Louis. The Federal board had made most of the interstate passenger fares in the central portion of the country average two and one-half cents. This made the fare from Chicago to St. Louis (in Missouri) \$7.50, while the fare from Chicago to East St. Louis (directly across the river, but in Illinois) only \$5.62. A similar complaint was received from Keokuk, Iowa, also just across the Mississippi from Illinois. After reviewing these complaints the Federal Commission held that two and four-tenths cents was a reasonable rate for interstate fares in this territory and required the railroads to remove the discrimination against St. Louis, Mo., and Keokuk, Iowa. The decision was limited, however, to the points involved in the complaint. The supplemental report covers all points in Illinois.

"'In our original report in this proceeding,' Commissioner Daniels says, 'it was shown how the lower state fares within Illinois furnished a means whereby passengers could and did defeat the lawfully established interstate fares between St. Louis and Illinois points. This was done by using interstate tickets purchased at interstate fares from St. Louis to an east side point in Illinois, and thence continuing the journey to any Illinois destination on a ticket purchased at the lower state fare.

upon local or state conditions. And this despite the fact that the vast majority of freight traffic is interstate, rather than intrastate. The majority of the grain from the farm lands of Nebraska or Minnesota is not destined for Omaha in the one case, or Minneapolis in the other; yet these sovereign states take upon their solemn shoulders the regulating of grain rates—to the ultimate discomfiture and cost of the other portions of the land.

I have but to refer you to Justice Hughes's decision in the so-called Minnesota rate case. He showed how this arbitrary local outgrowth of the obsolete doctrine

“We deem it advisable to point out that the interstate fares between St. Louis and Keokuk on the one hand and interior Illinois points on the other, made on a per mile basis of two and four-tenths cents, would likewise be subject to defeat if the state fares to and from interior Illinois points intermediate to the passengers' ultimate destination be made upon a basis lower than the fares applying between St. Louis or Keokuk and such Illinois destination. It would be necessary merely for the passenger who desired to defeat the interstate fare to shift the intermediate point at which to purchase his state ticket. The burden and discrimination which a lower basis of fares within the state casts upon the interstate commerce would not be removed merely by an increase in the intra-state fares to and from the east bank points.

“And not only this burden, but the direct undue prejudice to St. Louis and Keokuk will also continue if the east side cities while on the face of the published tariff paying fares to and from Illinois points upon the same basis as do St. Louis and Keokuk can in practice defeat such fares by paying lower state fares in the aggregate to and from Illinois destination, by virtue of such an adjustment of fares.”

As soon, however, as the railroads attempted to put this edict of the Interstate Commerce Commission into effect the state courts of Illinois stepped in and tied their hands. At the present time the matter is still involved in much litigation. And a man may buy a ticket from Chicago to East St. Louis for \$5.62, and for ten-cent trolley fare cross the Eads bridge into St. Louis. This is, of course, a great injustice to the railroads—an inequality which must sooner or later be adjusted, and the sooner, the better.

of states' rights worked to the utter and absolute detriment of the nation as a whole. And yet in the six long years while that case was pending the Great Northern and Northern Pacific companies lost more than \$3,000,000—a sum of money never to be recovered from their shippers—as a result of the state's unsustained reductions in freight rates.¹ No better argument has ever been framed for the nationalization of our railroads, for making the powers of the Interstate Commerce Commission absolute and supreme.

No wonder, then, that the railroaders are praying that a way may be found and found soon for lifting the entire authority over them out of the hands of the forty-five present state boards of control—who never

¹ "A curious light was thrown on this condition in connection with the Shreveport rate case. Texas, in order to keep Louisiana merchants from competing in its markets, had fixed a number of rates within the State applying between points of production and jobbing centers and markets in the direction of the Louisiana line. These rates were substantially lower than the interstate rates from Shreveport, Louisiana, to the same Texas points of consumption. The United States Supreme Court sustained the Interstate Commerce Commission in raising the Texas rates so that Louisiana business men could get a square deal.

"Thereafter Senator Shepard, of Texas, introduced a bill in the Senate to abolish the doctrine of the Shreveport case. In a hearing on this bill it developed that while Louisiana was protesting against rate discrimination on the part of Texas, the city of Natchez, in Mississippi, was making a similar protest against the action of Louisiana in fixing rates which excluded the business men of Natchez from the Louisiana markets. Moreover, one of those who appeared in favor of the bill was Judge Prentice, chairman of the Virginia Railroad Commission, which was at that time complaining that the state rate-fixers in North Carolina had discriminated against Virginia cities.

"In short, an appalling condition of interstate warfare was revealed that was hurting business generally and killing railroad development."—Harold Kellock in *The Century Magazine*.

have agreed and who apparently can never be made to agree on any one form of procedure—and placing it in the hands of the very competent regulating board down at Washington, enlarged and strengthened for its new burdens. The Interstate Commerce Commission has never shown a tendency toward freak rulings. Its time has been taken with genuinely important matters. On these it has raised itself to its present high degree of efficiency. It has shown itself capable of studying the details of complicated transportation problems and rendering decisions of great practical sense.

But the scope, and therefore the efficiency, of the Interstate Commerce Commission are closely hemmed in by existing laws. The latest "crisis" between the railroads and the four great brotherhoods of their employees brought this limitation sharply to the fore. It is therefore equally essential that the power and scope of the Federal commission be broadened as well as being made superior to those of the state regulating boards.¹ And it is gratifying to note the progress that

¹ When one comes to consider the possibility of the Interstate Commerce Commission being made supreme in these matters of railroad regulation, he must assume that the members of this Commission are to be held immune from interference; save by the actual and necessary processes of the higher courts. The objection by Senator Cummins, of Iowa, recently to the Senate's affirmation of the reappointment of Commissioner Winthrop M. Daniels, is in this connection, most illuminating and disquieting. Senator Cummins was careful to say that he held no quarrel against Mr. Daniel's character or personality. He added that he would be glad to vote for a confirmation of appointment to any other government position. Unfortunately, Commissioner Daniels had written several of the commission's opinions advocating recent raises in railroad rates. For this offense the Senator from Iowa sought to punish him by blocking his reappointment. Fortunately, however, Mr. Cummins carefully conceived revenge failed of execution. The Senate

President Wilson already is making toward the first of these necessary immediate reliefs to the railroads of the land.

If President Wilson shall succeed in persuading Congress that the entire control of the railroads should be placed in the hands of an enlarged and strengthened Interstate Commerce Commission, he will have earned the thanks of every man who has made an honest study into the situation. Such a commission, clothed with the proper powers, could and would do much not only toward relieving the railroads' immediate necessities in regard to both physical betterment and the enlargement of their pay-rolls, but in enabling them to grasp some of the opportunities which we have outlined in previous chapters—opportunities requiring a generous outpouring of money at the beginning. If I mistake not, public sentiment is going to demand that, if the railroads be granted the relief of unified regulation, they shall be prompt in their acceptance of at least some of these great avenues of development.

We have heard much in late years of the banker control of our railroads and of absentee landlordism in their management. The two things are not to be confused. Banker control is not, in itself, a bad thing. Absentee landlordism invariably is. There are good stretches of railroad in every part of the country that today are failing to render not alone the proper income

promptly and generously confirmed the President's appointment. But the episode shows clearly a great potential danger to which the members of this Commission, as well as all other regulatory boards, are subject if their honest opinions, as expressed in decisions, run counter to the whim of popular opinion.

returns to their owners but, what is worse, service to their communities, because of this great canker, this lack of immediate executive control and understanding. And it is significant in this close connection of two phases of the railroad situation that it was the banker control in New York of the one-time Harriman system — the Union Pacific, the Southern Pacific, the Oregon Short Line, etc.— that gave to it at one fell swoop, five presidents — one at San Francisco, one at Omaha, one at Portland, one at Tucson, and one at Houston — each a young, vigorous man equipped with power and ability. The good effects of that far-seeing move — that instant wiping out of the charges of absentee landlordism that were being lodged against the Harriman system — are still being felt.

It is not banker control that is essentially bad for our railroads. It is banker control together with an utter lack of vision, that has cost them so many times their two greatest potential assets — public interest and public sympathy. Banker control plus vision may readily prove itself the best form of control for our carriers. And that our bankers do not entirely lack vision may be argued by the far-seeing and opportunity-grasping way in which our bankers of the newer school are today reaching for American development in South America, in China, in the Philippines, and in other parts of the world.

Back of the President, back of the Newlands committee and its rather dazzling sense of importance, sits the nation. It is far superior to any mere committees of its own choosing and it is weighing the entire railroad

situation as perhaps it never before has been weighed. It is considering the enlargement and the strengthening of the Interstate Commerce Commission—together with it a feasible method for the Federal incorporation of our roads—this last a vital necessity in the mind of any man who has ever tried to finance an issue of securities for an interstate property with each separate state trying to place its own regulations—in many cases both onerous and erratic—upon them. With the spirit of Congress willing, there still remains the very large question of how far its power would extend, in attempting either to reduce the power of the state boards or to make them more amenable to the Federal commission. Our states have been most jealous of their sovereign rights. And it is easy to conceive that their aid and cooperation—so very necessary to the success of the entire ultimate project of the nationalization of our railroads—is not to be obtained by the mere wishing.¹

¹ "No one who has traveled about the world will seriously contend that there is any other country where the quality and quantity of rail transportation is so good or so abundant as in the United States. In most European countries rail transportation is furnished by the government at great cost to the public, both directly in the form of heavier taxes and indirectly in the form of high rates. In this country it is furnished by the investment of private capital. This capital is supplied by about 2,000,000 persons. It is absolutely at the mercy not only of the Federal Government, but, within their boundaries, of the legislatures of forty-eight States. How much it may earn depends upon the whim of these masters. How much it may lose has never been determined; for when a certain point is reached the courts step in and administer the bankrupt's business.

"Last year the railways of the country earned about \$1,000,000,000 net, a greater sum than ever before in their history. It was less than six per cent on railroad property devoted to the use of the public.

President Wilson has set the beginnings for the plan and set them well. As I write it is still up to Congress to undo its mischievous legislation which, if it is made to include an eight-hour day, should render a genuine eight-hour day, one applicable to every class of railroad employee—although it would be difficult to imagine a railroad superintendent or general manager or president quitting at the end of the short-term service. They are schooled to harder things.

And with the eight-hour day must come these other things to which we have already referred, not once but several times. First among these are the matters so

"The record earnings of the railroads in 1916 are being used and will be used to urge Government ownership. But how about the lean years? If in the most prosperous year of their lives the railroads of the country cannot earn six per cent, what happens in poor years? Ask the courts. They know.

"It is possible now, by right administration, to make particular railroads yield liberal returns to investors; but under Government ownership there could be no such incentive to careful management; the bad would be lumped with the good; the profits in one quarter would be required to meet the deficits in another; the Government would have to assume all necessary capital, and this would by so much impair the Government's borrowing power.

"If the people of this country can once be brought to appreciate the importance of maintaining the quality and expanding the quantity of rail transportation they will see to it that private enterprise is supported, not hampered, in furnishing this most vital of public services. They will manifest overwhelmingly a wish that the roads be set free from the conflicting authorities of forty-eight masters and be controlled by only one, greater than all the rest put together. They will demand that the Federal Government allow such rates as will permit earnings sufficient to attract private capital actually needed to supply public service. They will insist that the Federal control and regulation of transportation shall be as constructive and helpful as Federal control and regulation of banking. It is painful to look at the Federal Reserve system and then to contemplate the plight into which haphazard regulation has brought the railroads."—*The New York Sun.*

closely correlated in President Wilson's program that they cannot be separated from the eight-hour day: arbitration—compulsory arbitration, if you please—the strengthening of the power of the government to seize the railroads and operate them in a time of national panic or military necessity, the enlargement of the powers and the personnel of the Interstate Commerce Commission. With all these things accomplished, and the situation just so much strengthened, it will then become the duty of the railroads to reach out more generously toward their opportunities for further development as the transport service of a great and growing people. It will be necessary for them to attract, to train, to reward new executives of every sort; to further their credit by deserving credit, to show outwardly in a more potent way the thing that so many of them have believed they inwardly possess—true efficiency, both for service and for growth.

Please do not forget this great point of growth—of development, you may prefer to put it. In my mind, men, institutions, nations, even railroads never stand still; they either grow, or else they decline, they shrink, they die. But the Railroad, as the greatest servant of a great people, cannot die without bringing death to the nation itself. Therefore he *must* grow. He must plan. He must announce his plans. He must bring Public Sentiment to his aid. Law can do many things—but few of these latter ones. Public Sentiment may accomplish every one of them, and almost in a crack of a finger. No wonder that Capital—that conservative

fellow—longs to have him stand at the bedside of the Railroad.

The sick man is not without his ambitions—you may be sure of that. He sees his opportunities, perhaps more clearly than ever before in the course of his long life. He is anxious to be up and at them. But before this can be done, some of these things, which we have outlined so briefly here, will have to come to pass. There are reckonings to be made, huge doctors' bills to be met—and the American public will have to help meet them.

The alternative?

There are many panaceas suggested; but I fear that most of these are but nostrums. Ingenious, many of them are, nevertheless. And some of them come from men who speak with both authority and experience. One man proposes to have the entire Federal taxes paid through the railroad, which, in turn, would recoup itself through its freight and passenger rates. He makes an interesting case for himself. Another suggests a Federal holding company for all the railroads of the United States and makes his suggestion read so cleverly and so ingeniously that you all but forget that he is drawing only a thin veil over government ownership. Of government ownership I am not going to treat at this time; not more than to say that to almost all American railroaders—big and little, employers and employed, stockholders and bondholders—it represents little less than death itself to the sick man of American business. In my own opinion it is, at the least, a major operation—an operation whose success is extremely dubious.

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